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Sustainable management of tropical forests in Central Africa

In search of excellence

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FOREWORD

With its 2.8 million km^2 of tropical moist forest, the Congo basin is the second largest expanse of tropical rain forest in the world and is of special importance in local, national and international terms, in view of both its intact forests and the immense diversity of its biological resources. The products obtained encompass timber, mushrooms, honey, leaves, bark, roots, fruit and bushmeat, hides, trophies and other animal products. The environmental functions of the forest (conservation of soil fertility in local terms and carbon sequestration and regulation of hydrological cycles and climatic conditions in global terms) are also well known.

Management of the forest heritage has usually been seen as the almost exclusive sphere of the State, while commercial companies have simply obeyed the administrative and financial conditions imposed on them. Unfortunately, the State has been prevented from playing its role to the full by the lack of financial resources and technical and institutional capacities of public forest administrations.

Even so, various planning or management initiatives and activities with regard to forest resources have been undertaken in Central Africa in the past 25 years, among which the following are particularly noteworthy:

- at the national level, the establishment of proper institutional frameworks for the environmental sector, the revision of forest laws to adapt them to new international developments, the promotion of national environmental non-governmental organizations (NGOs), etc.;
- at the regional level, an unprecedented commitment on the part of States and mobilization of all those involved in political, economic and social life, has translated into the establishment of institutions and discussion and reflection fora as well as the setting up of political decision-making bodies such as the African Timber Organization (ATO), the Conference on Central African Moist Forest Ecosystems (CEFDHAC), The Conference of Ministers in Charge of Forests in Central Africa (COMIFAC) and many programmes supported by international partners;
- at the international level, the active part played by the countries of Central Africa in all international initiatives and conventions, particularly the Tropical Forest Action Plan, the Environmental Strategy and Action Plan, and the three conventions resulting from the Rio de Janeiro Summit (the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the United Nations Convention to Combat Desertification); more recently, an international Congo Basin Forest Partnership has been launched with a view to supporting present efforts.

In this context, with funding from the Netherlands and in collaboration with ATO, CEFDHAC, the World Conservation Union (IUCN), the World Wide Fund for Nature (WWF), the Inter-African Forest Industries Association (IFIA), the International Tropical Timber Organization (ITTO) and the International Model Forest Network Secretariat (IMFNS), FAO launched a programme to assess sustainable forest management practices in Central Africa and made a call for nominations in order to identify forests in the region that had been the object of management practices and efforts to achieve sustainable forest management.

While thanking all those who responded to the call for nominations, FAO wishes to stress that this exercise should not be seen as providing some kind of "seal of approval". Rather, it is hoped that the selected examples will be useful and replicable, leading to improved forest management practices in the various countries.

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ABBREVIATIONS AND ACRONYMS

AAC	Annual Allowable Cut
AAD	Asociación Amigos de Doñana (Spanish NGO)
AFD	French Agency for Development (Agence française de développement)
ATO	African Timber Organization
CAFT	Trinational Agroforestry Cooperative (Coopérative agroforestière de la Trinationale), Cameroon
CEFDHAC	The Conference on Central African Moist Forest Ecosystems
CIB	Congolaise Industrielle des Bois
CIFOR	Centre for International Forestry Research
CIG	common initiative group
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
COBABO	Bosquet Baka Community, Cameroon
CODEVIR	United Villages Development Committee, Cameroon
COMIFAC	The Conference of Ministers in Charge of Forests in Central Africa
DFID	Department for International Development, United Kingdom
ECO s.a.	Eucalyptus du Congo s.a.
ECOFAC	Conservation and Rational Use of Forest Ecosystems in Central Africa
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FCSM	forest concession under sustainable management (Gabon)
FHU	forest harvesting unit (Gabon)
FMU	forest management unit
FTRP	Future of Tropical Rainforest Peoples (EU programme)
GTZ	German Agency for Technical Cooperation (Gesellschaft für technische zusammenarbeit)
HFC	Humid Forest Ecoregion Center, Cameroon
HMP	harvesting and management permit (Central African Republic)
IFB	Industrie Forestière de Batalimo
IFIA	Inter-African Forest Industries Association
IITA	International Institute of Tropical Agriculture
IMFNS	International Model Forest Network Secretariat
INECN	National Institute for Nature Conservation and the Environment, Burundi
ITTO	International Tropical Timber Organization
IUCN	World Conservation Union
NEPAD	New Partnership for Africa's Development
NGO	non-governmental organization
NWFP	non-wood forest product
OBBC	Observatory of Baka and Bantu Cultures, Cameroon
PERAD	Environmental Protection, Research and Support to Sustainable Development, Cameroon
SDDL	Project for Sustainable Development Support in the Lomié-Dja Region (SNV project)
SNV	Netherlands Development Organisation (Nederlandse ontwikkelingsorganisatie)
TOU	technical operational unit (Cameroon)
UNDP	United Nations Development Programme

USAID	United States Agency for International Development
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

Central Africa contains one of the last great forest areas on earth, second in size only to that of Amazonia and made up of a vast, almost uniform, closed tropical moist forest cover, spreading over most of the countries of the Congo basin. The region possesses an exceptional biological diversity and a high rate of endemism. Although Central Africa has only a low overall rate of deforestation compared with other parts of Africa, its forests are suffering a degree of degradation hard to assess. There is a wide range of causes of deforestation and degradation, including shifting and settled cultivation, logging, forest fires, mining and infrastructure building.

In regional terms, the issue of sustainable forest management is now being given a very high priority on the political agendas of the countries of Central Africa. There are growing numbers of efforts to bring about sustainable forest management, with the establishment of institutions, discussion and reflection fora and political decision-making structures such as the African Timber Organization (ATO), The Conference of the Central African Moist Forest Ecosystems (CEFDHAC), The Conference of Ministers in Charge of Forests in Central Africa (COMIFAC), and more recently the Congo Basin Forest Partnership. Ratification of agreements and conventions also shows the will of governments to manage their forests sustainably, as do the implementation of active regional programmes (the Conservation and Rational Use of Forest Ecosystems in Central Africa [ECOFAC] Programme, the Regional Environment Information Management Programme, etc.) and the establishment of subregional networks.

In national terms, special institutional frameworks concerned with the environment are being set up, forest laws are being revised to adapt them to new international developments, national environmental NGOs are being promoted, etc.

In local terms, initiatives and activities focusing on sustainable forest resource management are growing in number and meeting with varying degrees of success: establishment of mechanisms for the decentralization of power, use of integrated, participatory approaches to the sustainable use of forest resources, taking account of the multiple uses and purposes of forests, etc.

In this context and under the new FAO/Netherlands Partnership Programme on Conservation and sustainable management of tropical moist forest ecosystems in Central Africa, FAO launched a new initiative entitled *In Search of Excellence* in May 2001, in close collaboration with regional and international organizations: The International Tropical Timber Organization (ITTO), ATO, the World Conservation Union (IUCN), the World Wide Fund for Nature (WWF), the International Model Forest Network Secretariat (IMFNS) and the Inter-African Forest Industries Association (IFIA).

The *In Search of Excellence* initiative seeks to address the issue of forest conservation and sustainable management through support to current subregional and national initiatives. Its main goal is therefore to identify and record successful attempts at sustainable forest management in Central Africa and thus promote adoption of best forest management practices at the local level. FAO and its partners sought examples of sound forest management in the subregion in order to identify the features of these exemplary types of management. In other words, the general approach is that of preaching by example, especially by identifying, recognizing and encouraging organizations and individuals successfully pursuing sustainable management of the region's forests. It also entails exploration of ways and means of replicating promising approaches elsewhere. All activities were carried out in close collaboration with the governments of the countries concerned and with non-governmental organizations (NGOs).

The initial step in this initiative was that of identifying a variety of good examples of forest management in Central Africa, using an open, transparent and participatory approach. A call for nominations of forests was widely circulated by FAO and its partners between November 2001 and April 2002, being sent to more than 250 people involved in forest management in the 11 countries concerned (Angola, Burundi, Cameroon, the Central African Republic, Chad, the Congo, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda, and Sao Tome and Principe) and elsewhere. Details of the initiative were also published in forestry magazines and trade journals, and distributed through forestry list-servers on the Internet and during seminars on related subjects. Twenty-four nominations from nine countries in the subregion were received, and the total area covered by all the nominated forests was more than 3 million ha.

An internal FAO selection committee prepared a list of criteria (objective, nature of the resource, type of manager, location, type of innovation, management standards, effective implementation, etc.) to assess the nominations. First, examples of forest management were identified that represented a whole spectrum of types of forest, management objectives, managers and geographic areas. Then new or innovative approaches were selected that have led to the establishment and maintenance of successful partnerships, as well as examples that could be replicated elsewhere and in which the management approach was neither too specialized nor too expensive. Following this consultation process, 14 nominations were selected as the subjects of case studies. In addition to the publication of these 14 case studies, FAO and its partners organized a workshop at Kribi, Cameroon, on 10–14 September 2002 in order to foster the exchange of the experience gained from these examples and promote the concepts of model and demonstration forests. FAO has also published the proceedings of this workshop.

It is important to stress that the *In Search of Excellence* initiative is not a competition and that the examples selected by FAO and its partners are simply those that best meet the proposed selection criteria. Furthermore, the choice of these forests should not be seen as some kind of seal of approval or certification of the forest management by FAO or its partners.

The selection of managed forests in Central Africa took into account a wide range of objectives and contexts (geographical and ecological zones, type of ownership, size, management objectives, etc.). Each objective of forest management is thus represented: sustainable timber production, biodiversity conservation, wildlife management, protection of fragile ecosystems, tourism, etc. Seven countries (Burundi, Cameroon, the Central African Republic, Chad, the Congo, Equatorial Guinea and Gabon) are also represented. Certain facts and observations should be highlighted among the many elements gathered in the analysis of the case studies of the selected forests and during the Kribi workshop:

- The forest sector in Central Africa is in the process of radical change. There are a growing and very real awareness and a will to manage forest resources sustainably on the part of all the actors and stakeholders in political, economic and social life, with an unprecedented mobilization and a change in mindsets. The forest management models of the past are thus becoming more complex. The imposed, centralized system of yesteryear, dominated by the State and excluding the local population from decisions concerning forest management and its implementation, is giving way to a negotiated, decentralized system. Whereas interventions in the forest sector previously focused on timber production and income generation, they now encompass a whole range of products and services, providing economic opportunities for communities and individuals, and seeking to contribute to poverty reduction and biodiversity conservation. The analytical and reductionist forest management of an earlier technical approach is changing, moving towards participatory management and trying to use an integrated, multidisciplinary approach involving farmers, local communities, NGOs, private-sector operators, government technical services and political leaders. Production and management goals are being diversified over a longer term to cover the many benefits to be obtained from forests, including environmental goods and services.

- In general terms, although the various actions and initiatives now under way are promising, they often come up against constraints of various types:
    - political constraints, with sometimes very violent civil strife and unrest experienced by some countries in the subregion;
    - financial constraints, with very little forest revenue being injected back into the sector;
    - commercial constraints, with companies preferring to confine themselves to a few commercial species in order to reduce risks;
    - institutional and regulatory constraints, with modern and customary laws that are often in conflict, and very little intersectoral dialogue;
    - socio-economic constraints, with poverty as the basic problem, leading directly to indiscriminate extraction of forest resources;
    - technical constraints, with a lack of knowledge on the nature of forest resources, and also the impossibility of reconstituting them exactly as they were;
    - moreover, knowledge is inadequate, scattered and poorly disseminated in many of the spheres involved in sustainable forest resource management.

The success of forest management will thus depend on the establishment of such preconditions as poverty reduction, improvement in the well-being of the local population and involvement of the various stakeholders at the local, national, regional and international levels. Forest management requires not only financial resources, but also a political will, social investments and, most important of all, the active involvement of local stakeholders such as communities and logging companies. It also requires greater attention to sustainable financing through the creation and transparent management of funding mechanisms. Investments are also needed in order to build up human and institutional capacities and disseminate knowledge.

The *In Search of Excellence* initiative selected current examples of forest management in which local stakeholders have come to play an important role and progressive approaches have been adopted. These are the initial stages in a longer-term process of sharing information and experience concerning sustainable management in Central Africa. There are plans to form a subregional network linking local-level initiatives involved with this subject, in order to foster the exchange of ideas on best practices and approaches among those responsible for forest management and other interested parties. If this is to take place, however, more of these examples from Central Africa are needed, ranging from promising political reforms at the national level to significant, innovative activities at the local level. It is important to continue to keep up and broaden the contacts established in the course of this project. And it will be important in the future to provide follow-up and support to these exchanges of experience and information by setting up networks and collaborating with already existing networks, while ensuring the continuation or inception of activities at national or forest management unit level, with a view to improving present practices.

THE *IN SEARCH OF EXCELLENCE* INITIATIVE

INTRODUCTION

Central Africa contains one of the last large forest areas on the planet, second in size only to that of the Amazon basin. This vast, near-uniform, closed tropical moist forest covers most of the countries in the Congo basin. It is a region of exceptional biodiversity with large numbers of endemic species. Although Central Africa has a low rate of deforestation compared with other parts of Africa, its forests are undergoing a degradation hard to assess. The wide variety of causes of deforestation and degradation include shifting cultivation, settled agriculture, logging, forest fires, mining and the building of infrastructures.

Aware of the dangers threatening their forest resources and with support from the international community, the countries of Central Africa have been stepping up their efforts to promote sustainable management of these forests. The conservation and sustainable management of forest ecosystems, especially biodiversity conservation, are essential in maintaining the productive capacity of forests and protecting the health and vitality of ecosystems, thereby maintaining their productive, protective and environmental functions as well as their social and cultural values. The issue of sustainable forest management therefore has a very high priority on the political agenda in Central Africa today, and there is an urgent need to translate this concept into practical action at field level. Moreover, long-term political commitment at both national and local levels is a *sine qua non* for implementing sustainable forest management programmes. It is essential that national organizations and local communities work together within each country, while cooperation between countries is also needed. The following initiatives indicate the present political support for this issue:

- The fourth session of CEFDHAC was held in Kinshasa on 10–13 June 2002 in accordance with the resolution on CEFDHAC follow-up procedures adopted by the inaugural session held in Brazzaville in 1996 (also referred to as the Brazzaville Process). CEFDHAC is a very broad discussion forum intended to foster collaboration over the conservation and sustainable use of the ecosystems of Central Africa's closed moist forests. The subject of the fourth CEFDHAC session was the integration of management of Central Africa's forest ecosystems and poverty reduction.
- The Summit of Central African Heads of State on the Conservation and Sustainable Management of Tropical Forests, held in Yaounde on 17 March 1999, entrusted ministers in charge of the subregion's forests with the task of coordinating and supervising implementation of the Yaounde Declaration through a regional Plan of Convergence. The Conference of Ministers in Charge of Forests in Central Africa (COMIFAC) was thus instituted, with its first meeting being held in Yaounde in December 2002. This organization is an authority and instrument for subregional cooperation on sustainable forest management, bringing together the ministers in charge of forests of Cameroon, the Central African Republic, Chad, the Congo, the Democratic Republic of the Congo and Gabon.
- More recently, during the Johannesburg Summit in September 2002, a formal declaration was made regarding a new partnership involving the United States, the United Kingdom, France, the European Union (EU), the

World Bank, ITTO, etc. The objective of this initiative, known as the Congo Basin Forest Partnership, is to provide support to efforts to conserve and develop the Congo basin forests.

In May 2001, under the new FAO/Netherlands Partnership Programme on Conservation and sustainable management of tropical moist forest ecosystems in Central Africa, and in close collaboration with regional and international bodies – ITTO, ATO, IUCN, WWF, IMFNS and IFIA – FAO launched a new initiative entitled *In Search of Excellence*.

The *In Search of Excellence* initiative seeks to address the issue of forest conservation and sustainable management through support to current subregional and national initiatives. Its main goal is therefore to identify and record successful attempts at sustainable forest management in Central Africa and thus promote adoption of best forest management practices at the local level. Its action falls within the framework established by CEFDHAC and COMIFAC, and involves the following 11 countries: Angola, Burundi, Cameroon, the Central African Republic, Chad, the Congo, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda, and Sao Tome and Principe. All these countries are members of CEFDHAC and/or COMIFAC, except for Angola, which has observer status.

The initiative is based on the approach described by Tom Peters and Robert Waterman in their very popular 1982 work on company management entitled *In Search of Excellence*. The authors had studied a selection of successful businesses and tried to identify the factors leading to their success. Along similar lines, FAO and its partners sought examples of sound forest management in Central Africa in order to identify the features of such cases and thus lend field-level support to implementation of the concept of sustainable management of tropical moist forests in that region. The general approach is thus that of preaching by example, especially by identifying, recognizing and encouraging organizations and individuals successfully pursuing sustainable management of the region's forests. It also entails exploration of ways and means of replicating promising approaches elsewhere.

The project's activities were and are carried out in close collaboration with the governments of the countries concerned and with non-governmental organizations (NGOs). The main results include:

- a set of case studies highlighting successful examples of sustainable management in Central Africa (Autumn 2002) in order to identify indicators of successful forest management;
- a subregional workshop to foster the sharing of experience resulting from these examples and promote the concepts of model and demonstration forests (Kribi, Cameroon, 10–14 September 2002);
- establishment of a subregional network for the sharing of information and experience among initiatives such as model and demonstration forests and other field-level initiatives concerning sustainable forest management, and facilitation of the exchange of ideas on best practices and approaches among those in charge of forest management and other interested parties.

IDENTIFICATION OF EXAMPLES OF SUSTAINABLE FOREST MANAGEMENT IN CENTRAL AFRICA

CALL FOR NOMINATIONS AND RESULTS

The initial step in this initiative was that of identifying a variety of good examples of forest management in Central Africa, using an open, transparent and participatory approach. The purpose of this selection was to illustrate the many practices and efforts aiming at sustainable forest management found in forests covering a wide range of geographical and ecological zones, types of ownership, sizes, and management objectives (production, protection, multiple uses, recreation, etc.).

A call for nominations of Central African forests was circulated by FAO and its partners between November 2001 and April 2002, being sent to more than 250 people involved in forest management in the 11 countries involved and elsewhere. This wide range of people – officials, managers, foresters and others – helped in identifying examples of successful forest management in Central Africa. Nomination forms were sent to national forest agencies, regional organizations, universities, environmental bodies, NGOs, logging companies, networks and individuals involved in the sector. Associations, NGOs and national and international foundations working for sustainable forest management in the subregion, as well as projects, programmes and research institutes, were extensively canvassed (see Figure 1). Details of the initiative were also published in forestry magazines and trade journals and distributed through forestry list-servers on the Internet and during seminars on related subjects in the subregion.

Nominations were then completed and sent either directly to FAO or to the partner organizations (prior to 30 March 2002). Nominations were accepted both from people and/or organizations wishing to propose their own forests and from those wishing to nominate others' forests.

FAO undertook the collation and analysis of the nominations, which are listed in Table 1. Twenty-four nominations from nine countries in the subregion were received. Eleven came from Cameroon, four from the Congo, two each from Burundi and Equatorial Guinea, and one each from the Central African Republic, Chad, the Democratic Republic of the Congo, Gabon and Rwanda. Angola and Sao Tome and Principe submitted no nominations. The most common management goals were rural development (community forests) with seven nominations, timber production plantations/agroforests with six nominations each, and biodiversity conservation (protected areas) with four nominations.

Figure 1: Individuals and organizations contacted (%)

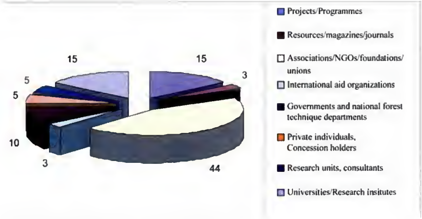

Figure 2 shows the number of nominations per country in terms of management objective. Only Cameroon and Congo submitted nominations for three of the four management categories, although Cameroon had a higher over-all number of nominations. Burundi and Equatorial Guinea submitted nominations for two of the management categories, while the remaining countries submitted nominations for only one. The total area covered by all the nominated forests was more than 3 million ha.

Figure 2: Number of nominations per country and per management objective

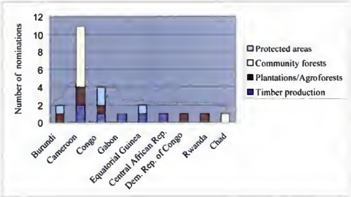

Table 1: List of nominated forests

Name of forest	Country	Organization managing the forest	Management objectives	Area (ha)
Haut-Abanga FCSM	Gabon	Rougier Gabon (private company)	Sustainable timber production Biodiversity conservation Wildlife management Fragile ecosystem protection	288 626
Patte d'Oie Forest Reserve	Congo	Forest Economy Regional Directorate, under the Ministry of Forest Economy in charge of Fishing and Fishery Resources	Biodiversity conservation Tourism Recreation	125
Kilibula plantation	Democratic Republic of the Congo	CADIC, KASUKULU, SONGOLO (NGOs)	Soil and watershed protection Fruit and fuelwood production	2 + 20
Ngotto forest	Central African Republic	Industrie Forestière de Batalimo (company)	Sustainable timber production Biodiversity conservation	195 000
Eucalyptus du Congo s.a. plantations	Congo	Board of directors General management	Wood for paper pulp	42 000
Ruhande Arboretum	Rwanda	Institute of Agricultural Sciences of Rwanda	Selection of productive forest and agroforestry species suited to regional conditions, prior to their dissemination Biodiversity conservation	200
Pokola-Kabo-Loundoungou Forest	Congo	Congolaise industrielle des bois (company)	Sustainable timber production Biodiversity conservation	1 150 000
Moangue le Bosquet community forest	Cameroon	Baka community	Safeguarding of landholdings Biodiversity conservation Conservation of rights of use Production/management	1 662
Ngola and Achip community forest	Cameroon	Gbopaba community of Ngola and Achip villages	Conservation of rights of use Production/management	4 200
CODEVIR community forest	Cameroon	United Villages Development Committee (CODEVIR)	Conservation of rights of use Biodiversity conservation Production/management	4 100
CAFT community forest	Cameroon	Trinational Agroforestry Cooperative (CAFT)	Multiple uses: production of cocoa, fruit, timber, medicinal plants, etc.	17 970
Nzienga-Mileme community forest	Cameroon	PERAD (NGO)	Improvement in the people's living conditions Sustainable forest management	4 800
Kilum-Ijim forest	Cameroon	19 village communities	Biodiversity conservation Rights of use	20 000
Southern Cameroon cocoa agroforests	Cameroon	Communities supervised by IITA-HFC	Multiple uses: production of cocoa, fruit, timber, medicinal plants, etc.	139 651

Name of forest	Country	Organization managing the forest	Management objectives	Area (ha)
So'o Lala Forest Reserve	Cameroon	Cameroon State/National Office for Forest Development	Sustainable timber production	39 728
Campo-Ma'an Forest	Cameroon	Campo-Ma'an technical operational unit	Biodiversity conservation Sustainable resource use Socio-economic development	770 000
Luba Crater Scientific Reserve	Equatorial Guinea	Bioko Biodiversity Protection Programme	Biodiversity conservation	51 000
Ndote forest	Equatorial Guinea	Equatorial Guinea Forestry Company	Timber production Coastal ecosystem conservation	54 990
Mogroum forest	Chad	Mogroum Canton	Fuelwood and timber production Biodiversity conservation	40 000
Kibira National Park	Burundi	National Institute for Nature Conservation and the Environment	Sustainable biodiversity conservation Soil and watershed protection	40 000
Magara plantation	Burundi	Local communities	Participatory management	60
Lokoundjé-Nyong forest	Cameroon	Ministry of the Environment and Forests	Sustainable timber production	128 568
Lossi Gorilla Sanctuary	Congo	Lossi Land Rights-holders' Association, and the ECOFAC Programme	Tourism and recreation	35 000
Meme River Forest Reserve	Cameroon	Local communities (Bakundu and Mbonge)	Local use Soil and watershed protection	1 450

There are two main reasons for the low number of nominations per country in terms of management objective and category of manager:

- little experience in the production and publication of scientific texts on forest management in the subregion;
- difficulties in distributing the call for nominations: official procedures for submitting nominations were often preferred over more flexible and informal procedures; in addition, communication difficulties in the subregion (e-mail, fax and telephone) considerably hampered the return of mail and therefore the number of responses to the call.

Descriptions of each nominated forest are given in the following chapters (see the case studies and the brief descriptions of other nominated forests). These are descriptive summaries based on the information contained in the nominations received, emphasizing the main reasons for their selection by the nominator as examples of successful forest management.

While reading these descriptions, it will be seen that the criteria of a "well-managed forest" can vary widely, ranging from technical and scientific, especially for production forests (zoning, inventories, extraction rate, silviculture, research, etc.), to socio-economic, especially for community forests (economic impact on the local population, participatory management, etc.), institutional and political (decentralization, collaboration and institutional partnership, etc.) and environmental (conservation. regeneration of certain species, etc.). However, they are not mutually exclusive and may appear together for the same nominated forest.

However, two important criteria occur in almost all the nominations received by FAO. First, the forest management approaches described usually, although to varying degrees, take account of the various stakeholders (whether or not they have an official role) in decision-making with regard to management, as well as its implementation (for example, participatory appraisal). Although such arrangements differ from forest to forest depending on those involved (local population, national institutions, administrations, private sector, etc.), most nominations indicate that it is extremely important to take account of the various stakeholders in the different stages of forest management.

The other issue that appears clearly in the various nominations is the existence of secondary objectives linked to the main objective and the taking into account of the wide range of benefits and uses to be gained from management. Although most nominations have a main objective (conservation, production, etc.), they also list other possible benefits to be obtained from forests, for example conservation and improvement in the local standard of living, timber production and natural resource conservation.

SELECTION OF CASE STUDIES

A selection committee composed of FAO experts in various areas of forestry (policy and planning, management, conservation, community forestry, agroforestry) reviewed the nominations and then chose the most suitable. FAO's selection was then sent to all the organizations participating in the initiative for their comments and amendments. FAO's internal selection committee set up an analysis process with a list of criteria to assess the nominations, in order to:

- have a reasonable range of nominations in terms of type of forest, management objective and geographical location (country);
- select new or innovative approaches, with a preference for forests that are less well-known but can be considered promising examples;
- assist in technical analysis thanks to examples of forest management actually in operation;
- define the sustainability of these examples of management (preference being given to management structures with a proven record and with only limited external support);
- select examples that can be replicated and in which management is neither too specialized nor too expensive;
- take into account the three components of sustainability (the social, environmental and economic dimensions);
- select management examples that have led to and maintained successful partnerships;
- take into account nominations suggested and/or proposed by a third party.

The criteria used in selecting forests had to be pragmatic in order so far as possible to avoid subjective choice. These criteria were as follows:

- primary management objective;

- nature of the resource;
- type of manager;
- location;
- type of innovation or new approach used;
- management standards;
- effective field-level implementation;
- conformity with national forest policy;
- sustainability;
- assistance obtained (local/external);
- possibility of replication;
- size of the stand;
- social, environmental and economic benefits produced;
- transparency of management;
- quality of partnerships;
- credibility of the person/organization submitting the nomination.

However, the selection process was not free of difficulties (or bias) because of disparities in the quantity and quality of the information provided for each nominated forest. It was also hard to gauge the soundness of the management actually being practised on the sole basis of the documents provided.

Following this consultative process, a final list of 14 case studies was established. First, examples of forest management were identified that represented a whole spectrum of types of forest, management objectives and geographical areas (countries). Then new or innovative approaches were selected, as well as examples that could be replicated elsewhere and in which the management approach was neither too specialized nor too expensive. Thus, each management objective is represented, as are seven of the nine countries that submitted nominations. The number of forests selected was also determined by limitations on the funds allotted for case studies.

It is important to stress that the *In Search of Excellence* initiative is not a competition and that the examples selected by FAO are simply those that best meet the proposed selection criteria. Furthermore, the choice of these forests should not be seen as some kind of seal of approval or certification of the forest management by FAO or its partners. The aim of both the selection and the preparation of case studies is to draw lessons from examples representing a wide range of management objectives, types of ownership, etc., in order to analyse and distribute these conclusions and lessons, contributing thereby to an increase in knowledge and an improvement in existing forest management practices.

The case studies on the management of the 14 forests were then prepared and published (see the list in Annex 1) according to the terms of reference given the author, enabling readers to make comparisons between the different studies. They seek to analyse the lessons learned and their potential application to other types of forest and forest management in the subregion. Summaries of these documents are given in the following chapter.[1]

A subregional workshop was also held to share and disseminate this information on sustainable forest management in Central Africa (Kribi, Cameroon, 10–14 September

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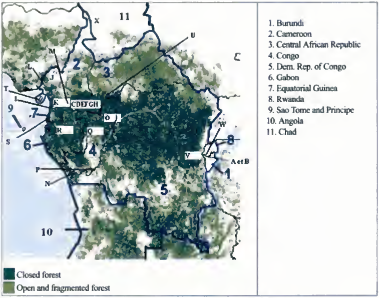
[1] The full case studies are available in a series of working documents on forest management produced by FAO's Forest Resources Development Service (see Annex 1).

2002).[2] This meeting produced a number of recommendations on the preparation of forest management plans, the establishment and maintenance of partnerships, forest management for multiple uses and values, the role of research and technology, and ways of improving current practices and approaches, sharing experiences and extending best management practices. With a view to better distribution of information on the experiences and initiatives of model and demonstration forests and other activities concerning field-level sustainable forest management, it was recommended that new networks be set up dealing with aspects of sustainable forest management not covered by existing networks, involving all actors and stakeholders so far as possible, and that existing networks be strengthened and expanded.

Figure 3: Location of nominated forests

Based on the map of Central African forest cover according to the *Global Forest Resources Assessment 2000* (FRA 2000).[3]



Burundi	A= Kibira National Park	B=Plantation de Magara
Cameroon	C=Cocoa agroforestry systems,Cameroon	D=CAFT community forest
	E=CODEVIR community forest	F=Moangue le Bosquet community forest
	G=Ngola Achip community forest	H=Nzienga- Mileme community forest
	I= Campo-Ma'an forest	J=Kilum-Ijim Forest
	K=Lokoundje-Nyong	L=Meme River Area Reserve Forest
	M=So'olala Congo forest Reserve	N=Eucalyptus du Congo
	O=Pokola-Kabo-Loundoungou forest	P=Patte d'Oie forest reserve
	Q=Lossi Gorilla Sanctuary	
Gabon	R=Haut-Abanga FCSM	
Equatorial Guinea	S=Ndote/SOFOGE forest	T=Caldera de Luba
Central African Rep	U=Ngotto forest	
Dem. Rep. of Congo	V=Kilibula plantation	
Rwanda	W=Ruhande Arboretum	
Chad	X=Mogroum forest	

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[2] The proceedings of the Kribi workshop are also available from FAO's Forest Resources Development Service.

[3] FAO. 2001. *Global Forest Resources Assessment 2000. Main Report.* FAO Forestry Paper 140. Rome.

CASE STUDIES

TIMBER PRODUCTION

Lokoundjé-Nyong forest, Cameroon

Based on the work of Germain Yéné Yéné
Development Consultant, Mba Mba Georges, Cameroon

The experience gained in the process of developing a management plan for this concession, the first of such a size (125 568 ha), has enabled Cameroon to refine a range of tools to achieve sustainable management of forest resources.

DESCRIPTION OF THE LOKOUNDJÉ-NYONG FOREST

The Lokoundjé-Nyong forest is an area of 125 568 ha, stretching over Cameroon's Sud, Littoral and Centre Provinces. This reserved forest is registered as a forest concession. It is a closed moist forest lying mainly in the Biafran Atlantic zone, with a small part in the coastal Atlantic zone. It suffers severe disruption because of a large human presence. Moving from the interior towards the coast, the following succession of vegetation types is found: typical Biafran Cesalpiniaceae forest, forest in which Cesalpiniaceae are still abundant, forest in which Cesalpiniaceae are relatively rare, and lastly typical *Lophira alata* and *Sacoglottis gabonensis* coastal forest. The Bovidae, Cercopithecinae and Viverridae families predominate among the most common wildlife species.

THE CAMEROONIAN CONTEXT AND THE VARIOUS STAKEHOLDERS

With a view to creating a political and institutional framework favourable to sustainable management of forest resources, Cameroon has carried out important reforms in the forest sector since the early 1990s, with the establishment of a Ministry of the Environment and Forests in 1992, the publication of a forest policy document in 1993 (revised in 1995) and the promulgation of forest legislation in January 1994 (Law 94/01) providing regulations for forests, wildlife and fishing, while Decree 95/531/PM of 20 August 1995 lays down how forest regulations are to be applied.

The 1994 law advocates the maintenance of permanent forest on 30 percent of the country's area, subdivided into community forests and State-owned forests and including protected areas and logging concessions. The various zones are definitively earmarked for resource conservation or sustainable timber production. This concern led to the development of a zoning plan for southern Cameroon, which has been in place since 1997. Harvesting of the resources of the permanent forest is to be carried out on the basis of a management plan drawn up according to guidelines provided by the Ministry of the Environment and Forests, and the management plan is to be approved by the government authorities in charge of forests.

The Ministry of the Environment and Forests is responsible for drawing up and implementing the State's forest policy, while the National Office for Forest Development, which falls under the ministry, is responsible for technical operations. For several years, private structures have been set up to carry out management work financed by concession-holders or other private forest-sector commercial companies.

The Lokoundjé-Nyong stand is under the charge of a technical operational unit (TOU) created in 1999, which is a decentralized technical structure of the ministry. Although it may stretch across several administrative units, it is headed by a single warden. The Lokoundjé-Nyong forest TOU falls administratively under the Sud provincial delegation and technically under the Forest Directorate, and the warden receives field-level support from the heads of forest stations. The concession-holder is responsible for implementing management measures and also participates in socially oriented work by paying an annual forest fee and carrying out activities agreed with the local population.

The inhabitants of the 31 villages bordering on the forest apply management measures in the buffer zone. Partnership with the local population is established through rural forestry committees, which were set up in all the villages in the TOU zone when the management plan was being prepared in order to establish a TOU/population/concession-holder/other partners interface.

There is at present no operational partnership within the framework of the Lokoundjé-Nyong forest management plan. However, some management measures in the buffer zone are supported by funding from the Canadian International Development Agency through the Sustainable Development of Cameroonian Forests and the Support for the Protection of Cameroon's Environment Projects, with the technical participation of the TOU. From time to time NGOs such as WWF visit the forest.

MANAGEMENT OF THE LOKOUNDJÉ-NYONG FOREST

In 1992, towards the end of Phase 2 of the Canadian-Cameroonian Institutional Support to the Forest Sector Project, the Canadian and Cameroonian parties carried out a study to identify a forest that could be the subject of a pilot forest management project. They chose the Edéa forest, later known as the Lokoundjé-Nyong forest. With technical and financial support from Canada, the Lokoundjé-Nyong Project was set up and then replaced in 1999 by the Lokoundjé-Nyong TOU. After a major information and awareness campaign in all the villages of the zone, the Lokoundjé-Nyong forest was closed off and declared a timber production forest in 1997, with the management plan being finalized in 1998. The plan was prepared mainly following the biophysical management inventory guidelines developed for the Lokoundjé-Nyong forest pilot management project on the basis of the guidelines of the National Office for Forest Development, which recommend dividing the forest into blocks of 25 000 to 50 000 ha depending on the total area of the forest, with each unit being considered individually in terms of the sampling plan and inventory results.

The Lokoundjé-Nyong forest concession was allocated to the Mba Mba Georges Sarl company following a call for tenders in 2000. A provisional three-year logging agreement was drawn up, accompanied by terms and conditions. Mba Mba Georges Sarl has its headquarters in Kribi, where it also owns a processing plant. It is a fully Cameroonian-owned company, employing more than 250 people.

A biophysical management inventory was made, including an inventory of timber resources with a sampling rate of 0.5 percent, as well as soil research and a census of wildlife species. Data were processed by compilation unit and stratum, thus giving a density table and an overall stocking table showing volumes per species and per diameter category.

Classification was carried out in terms of vegetation, morphopedology and density, and four main types of land use were defined for the concession: primary forest, secondary forest, forest on hydromorphic soils, and crop and fallow land. Sectors not suitable for production were identified on the basis of ecological and cartographic criteria, field observations, and the results of studies and/or information provided by the local population. These sectors (or "allocations") were then mapped on a 1:50 000 scale.

Management of wood products in the Lokoundjé-Nyong forest follows a combination of volume- and capacity-based principles. The forest was divided into eight five-year management blocks and 40 felling coupes on the basis of the volume to be extracted per period, with the potential level of extraction and growth being estimated for each species and with a 40-year rotation period. Silvicultural interventions are proposed in the management plan (clearing around future stems, liberation cutting, enrichment, etc.). To get a better idea of forest dynamics or the stand's reactions to different interventions, the management plan recommends setting up permanent monitoring plots for each type of intervention being used. However, logging activities are still being carried out under the provisional logging agreement, and silvicultural interventions and permanent monitoring plots have not yet been set up. Reduced-impact logging is achieved by following forest intervention guidelines developed with Canadian development aid in order to improve forest management practices in Cameroon: directional felling, creeper removal, the planning of road networks, skid trails and stockyards, etc.

A socio-economic study was also carried out to discover how space and resources are used. The local people are closely associated with the preparation and implementation of the management plan through rural forestry committees set up in each village, which act as intermediaries between the forest administration, the concession-holder and the villagers. These committees are composed of eight members elected by the village and are concerned mainly with information, animation, training and participation of the village in management. However, since the end of the project – and hence of material and financial support – the rural forestry committees have ceased to be operational.

Conservation and protection measures focus on sensitive zones or those at risk of soil degradation. Fishing and hunting are permitted in these zones, while collecting is restricted to fruit. Logging, the gathering of poles and agriculture are banned. There are also forest intervention rules (a ban on handling motor fuel and oil or establishing a stockyard within 60 m of a watercourse, etc.).

Wildlife will be taken into account in management by establishing a wildlife protection allocation (4.6 percent of the area of the concession) where wildlife habitats will be developed. Measures will be taken regarding hunting. However, there are as yet no guidelines or rules for an inventory or the management of wildlife in a timber production forest.

Rights of use or customary rights are recognized for local inhabitants for household use. It should be noted that illegal logging on the concession has practically ceased. Management and/or silvicultural measures to be established for non-wood forest products (NWFPs) will be examined in greater depth when preparing the five-year and annual plans, identifying their extraction areas and making an inventory of them. In addition, management measures for the buffer zone must harmonize the local people's uses with production systems that foster maintenance of forest vegetation. A land use plan must thus be developed for each village.

ASSESSMENT AND CONCLUSIONS

With an adequate legal and institutional framework, management of the Lokoundjé-Nyong forest offers good chances of success. Some of the logging practices observed on this forest concession should be encouraged and promoted, such as the demarcation of annual felling coupes, respect for minimum harvest diameters, respect for seed-trees so as to conserve the biodiversity and economic value of the forest, certain reduced-impact logging techniques and certain environmental protection measures during logging activities. Other practices to be encouraged are minimization of the amount of wood abandoned in stockyards or the forest by adopting efficient sawing techniques, tagging of stumps and logs, minimum clearing when making roads and tracks through the forest, and an official ban on company workers' possession or transportation of game.

Implementation of the Lokoundjé-Nyong forest management scheme is too recent (two years) for any lessons to be drawn, especially as the silvicultural measures have not yet been implemented. Difficulties experienced by the TOU have prevented adequate monitoring of the management practices so far adopted – indeed, full implementation and adequate supervision and monitoring of a management scheme of this breadth require appropriate levels of human, material and financial resources. The respective obligations (especially financial and technical) of the concession-holder and the TOU also require clarification, for the concession-holder cannot shoulder all the costs involved in adequate implementation of such a scheme. It is also important that the local population be supported in its management of the buffer zone. And it is vital that partnerships between NGOs, the TOU, the local people and the concession-holder be established, if implementation of management measures is to be successful.

Management of the Lokoundjé-Nyong forest has created many expectations among the local population, and these need to be fulfilled. It has also inspired and fostered an enthusiasm for community forest projects in the forest concession buffer zone. At present, local economic fall-out from such harvesting is confined to the 10 percent of the annual forest fees that is paid back to the villagers via the communes, improved access to the villages, and the modest wages received. When the definitive agreement is signed, other social schemes will be added to the terms and conditions.

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Haut-Abanga forest concession, Gabon

Based on the work of Nicholas Bayol
Forêt Ressources Management/Rougier, Gabon

E. Chézeaux, FRM. Forest landscape, Haut-Abanga FCSM, Gabon.

This example describes a large concession on which management, based on a detailed knowledge of the resource, is integrated into the company (with a management unit). A set of forest management and harvesting rules was drawn up and implemented, while logging operations are closely monitored on the basis of these rules. Reduced environmental impact logging techniques have been developed, and the results of studies and research applied. Considerable efforts have been devoted to conservation, with 5 percent of the concession being placed under comprehensive protection of exceptional ecosystems. Wildlife has also been taken into account in a working plan put into operation in 2002. The overall management plan was developed through collaboration between the concession-holder, local and international NGOs and the government directorate in charge of forests.

DESCRIPTION OF THE CONCESSION

The Haut-Abanga forest concession under sustainable management (FCSM), awarded to the Rougier Gabon company, is a State-owned natural closed moist forest with an area of 288 626 ha located in the north of Gabon (in Woleu Ntem and Estuaire Provinces). The stand is part of the regional centre of Guineo-Congolian endemism and has an exceptionally high degree of specific diversity. Over 99 percent of the Haut-Abanga FCSM is at present covered by forest and the main formations are secondary closed moist forests of various ages, usually the result of agricultural clearing. Other plant formations have been identified on the concession, such as those on mountains and steep slopes. The higher-altitude forests have an abundance of creepers, mosses and lichens, a whole range of begonias and a greater abundance of species typical of primary forests. The Haut-Abanga forest can be described as a forest of Burseraceae (18 percent of the land area), Myristicaceae (15 percent), Cesalpiniaceae (15 percent) and Euphorbiaceae (9 percent).

The concession appears to be relatively rich in wildlife in terms of both diversity and quantity. In particular, elephants, panthers, duikers and mandrills are frequently seen, while gorillas, chimpanzees, various small primates and buffalo are also found.

THE GABONESE CONTEXT AND THE VARIOUS STAKEHOLDERS

Gabon's new Forest Code was promulgated on 31 December 2001, establishing a regulatory framework oriented very clearly towards sustainable management of the forest heritage by placing forest concessions under management. Application decrees are still to be drafted in order to allow full application of the code. The country's forests are divided into permanent State-owned forests and rural forests whose use is reserved to village communities. The rural forest system has not yet been formally established and regulations governing management procedures still have to be drawn up. Gabon also intends the new Forest Code to promote development of a timber processing industry. Each management plan must be accompanied by an industrialization plan encompassing the establishment of new industries that can make use of the available resource. The Forest Code defines several types of permit: FCSMs, covering an area of 50 000 to 200 000 ha; associated forest permits, covering areas of less than 50 000 ha; and mutual agreement permits, covering 50 trees. With regard to the social dimension, the law stipulates that any FCSM management plan must take into consideration the people living in the area affected by the FCSM. Further, FCSM permit-holders must make a financial contribution to support collective-interest development activities initiated by the village communities. This new Forest Code thus sets logging companies at the heart of forest management of their concessions. Logging companies normally receive technical support from consulting firms specializing in forest management, and financial support in the form of loans from the French Agency for Development (AFD), to help them to prepare their management plans and acquire the skills needed for execution of their new tasks.

The forest administration is responsible for ratifying all development and management documents and then monitoring their proper implementation. The offices of the Ministry of Forest Economy most directly involved are the Directorate of Forest Inventory, Management and Regeneration and the Directorate of Wildlife and Hunting, the latter being responsible for managing wildlife and protected areas.

Management of the Haut-Abanga FCSM has been entrusted to a private company, Rougier Gabon, for timber production, biodiversity conservation, wildlife management and fragile ecosystem protection. The French consulting firm Forêt Ressources Management provides on-going technical support. In addition to the forest administration, there is close collaboration among Rougier Gabon, the Directorate of Forests and NGOs involved in conservation (WWF and the Wildlife Conservation Society [WCS]).

The FCSM is relatively inaccessible. Moreover, it has contained no indigenous inhabitants since the 1950s, while the closest villages today are located nearly 5 km from its boundary and have no direct access to it. Sociologists who have conducted research in all these villages have recorded no claims to customary rights inside the concession area. Human pressure on the forest ecosystems therefore tends to be very low.

Full integration of forest management activities into the company is vital if the measures advocated in the management plan are to be effectively implemented. With this in view, the company's internal organization was overhauled and a central management unit, set up in Libreville in 1999, was placed in charge of coordinating and supervising all forest development and management activities. At field level, a Gabonese forestry specialist supervises implementation of management and working documents on each FCSM, working within a local management branch that falls under the logging supervisor.

FOREST MANAGEMENT OF THE FCSM

Ninety percent of the Haut-Abanga FCSM has already been harvested by various logging companies between the 1960s and now. The management process began with a feasibility study of the FCSM management project in 1996, and this led to the signing of a provisional management/logging/processing agreement. The project was launched in 1998 and 1999, with the development of technical norms through on-site pilot activities and the establishment of a management unit within the company. A reflection on the FCSM management approach was carried out at the end of 2000 on the basis of this analytical work, leading to the preparation of a management plan then approved in January 2002. There were consultations with WWF and WCS throughout the process of preparing the management plan.

Rougier Gabon's commitment to the management process on its concessions arises from various motives: conformity with national legislation, stable integration into the local and national economy, conservation of the forest heritage, rationalization of logging activities and increased productivity. There is also the possibility of industrial funding conditional on its commitment to sustainable management and possible certification – and a certification audit was in fact carried out in 2002.

Management is based on a detailed knowledge of forest resources (exhaustive management and harvest inventories) and on such management's being integrated into the company through a central management unit and a local branch. A body of forest management and harvesting rules has been drawn up and put into practice, and harvesting operations are closely monitored on the basis of these rules.

The management inventory covering the whole FCSM was intended to give precise information on current and future resources, counting all species (300) and all future stems with a diameter of 10 cm or more. Forest sample plots were also installed for post-harvest monitoring, while okoumé regeneration trials were launched to obtain a better understanding of ecosystem dynamics. These studies were carried out internally with Forêt Ressources Management support and in close collaboration with local and international research bodies. Wildlife was also taken into account in surveys. Thanks to forest mapping, inventory data could then be processed in stratified terms and each plant formation identified. Thanks to the geographical information system, the distribution of the various elements recorded could then be studied. Maps were thus drawn up of timber potential, and also of plant diversity, the abundance of the various animal and plant species, and pressure on wildlife. The amount of available timber is now very precisely known and simulations of stand development can be made, so that a real reflection on harvesting and processing activities is possible. The management document thus plans activities on the FCSM for the next 25 years.

Each management block has a corresponding objective: a timber production block, a biodiversity conservation block and two protection blocks. The decision to set up the conservation series was made when a hitherto untouched zone with a very wide range of timber species was discovered. One protection block focuses on the peaks, ridges and high slopes of the main mountain massifs and fragile environments, and the other on the banks of the Abanga, which are particularly rich in large wildlife. All extraction and the introduction of machinery are banned on the conservation and protection block (about 10 000 ha). Supplementary studies could be carried out on these blocks in collaboration with NGOs or research scientists. Two subunits have been created within the production block to take into account the forest activities of those living in camps: the agroforestry group, where agricultural clearing and hunting will be authorized under certain conditions. These two subunits will have their own management documents.

With a view to management of the production block, future changes in the present forests were modeled on the basis of inventory and forest dynamics data. Management parameters, rotation length, minimum harvest diameters and a list of target species were defined in order to ensure a satisfactory regeneration of forest stands.

The key step in implementation of the management plan is the harvest inventory, which allows a short-term harvest plan to be drawn up and harvest operations to be rationalized. It is a full-scale inventory of forest stands in the zones to be harvested. It is carried out one year prior to harvesting and is accompanied by a very detailed mapping of inventoried trees, topographical features and constraints on harvesting. A study conducted in 2000 showed the major advantages of careful planning of tracks in order to minimize damage and also laid down rules to ensure the most efficient use of networks.

N. Bayol, FRM/Rougier. Measuring the diameter of a Ilomba during a pre-harvest inventory. Haut-Abanga FCSM, Gabon.

After the harvest inventory, summaries of resources potentially available for annual allowable cuts (AACs) are drawn up, together with logging maps. Logging can then be organized and monitored on a daily basis. Cutting is planned on two forest management units (FMUs), which are in turn divided into forest harvesting units (FHUs) so that an equal volume can be produced annually. Logging is planned on three levels, as the following table shows:

Document	Duration	Unit
Management plan	Length of rotation (25 years)	FCSM
Working plan	4–7 years	FHU
Annual harvesting plan	1 year (possible extension to 3 years)	AAC

N. Bayol, FRM/Rougier. Training on directional felling provided by an expert from IPC. Haut-Abanga FCSM, Gabon

The management plan lays down logging rules covering felling, hauling and skidding, limitation of timber loss, limitation of chemical pollution (recovery of sump oil) and optimization of the secondary road network. The silvicultural approach adopted is that of irregular coppicing with a 25-year rotation to allow adequate regeneration of the forest.

Logging is supervised and monitored both internally and externally. A comprehensive system has been set up to monitor harvested products from the log in the forest through to its processing and/or marketing. Rougier Gabon has a veneering and plywood plant, supplies to which will be diversified so as to make the best use of the available resource. In coming years, industrial capacity will be expanded with the installation of a sawmill on the Haut-Abanga site. Analysis of available resources has been carried out, focusing on the technological features of each species, in order to provide guidance for choices with regard to industry.

Wildlife has also been taken into account with a working plan put into operation in 2002. Financial support has been requested from the French World Environmental Fund, with Rougier Gabon being ready to finance half the programme, which has three components: rational wildlife management, prevention of poaching, and monitoring and evaluation of the wildlife management/conservation component of the overall management plan. Commercial hunting is banned, as is access to tracks by anyone outside the company. A team of ecorangers will be formed. The activities of the Rougier management unit will include implementation of this programme. A wildlife management committee is planned, which will supervise and provide guidance for wildlife management and conservation on the FCSM. A system will be set up to provide biological and socio-economic monitoring and evaluation of wildlife conservation.

In socio-economic terms, management should bring about improved living conditions in the forest camps. A major effort had to be devoted to training staff. The FCSM also helps to maintain jobs and the economic fabric of the countryside. Rougier Gabon will be involved in local development by financial contributions to local-level projects.

ASSESSMENT AND CONCLUSIONS

It is important to stress the revolution that sustainable management brings about within the company: new know-how, new working methods, new relationships both within the company and with outside partners, etc. Management of Central African forest concessions cannot be pursued outside the company and still less in opposition to the company, for even if the forest belongs to the State, the logging company is present in the field on a daily basis and it is logical for it to act as forest manager. It is the only one capable of guiding management choices that are closely linked to production choices. If a management project for a production forest is not congruent with the business culture of the logging company, it is unlikely to be successful.

The second lesson lies in the remarkable progress of dialogue among the partners in sustainable management in Gabon in recent years. NGOs, people's representatives, government agents, logging companies and researchers are meeting together, exchanging ideas and moving forward in concert in the interests of all.

The technical approach adopted in preparing the Haut-Abanga FCSM management plan can be reproduced on all large concessions (those of more than 100 000 ha) allocated to companies with corresponding production tools, with the adjustments inevitably needed for different situations. In Gabon, as in the Congo, large concession-holders are already extensively involved in sustainable management of their concessions, and in a few years' time 5 to 7 million ha of production forest in Gabon should be under management. However, the individuals or small or medium-sized companies granted "small" permits have only light structures and will be unable to meet the same management standards. Technical solutions to group permits together, simplify management procedures or adapt regulations have yet to be found, and funding systems have to be sought. These small concession-holders often operate informally and only barely within the law. Furthermore, they are not subject to the same pressure as large, internationally known companies. New penalties and incentives must therefore be established. A certificate of good management would be a bonus for good pupils, although it would not be of use today outside a limited market in Europe. National and international incentives could also eliminate some barriers.

Although the international timber market is hard to control, it is an essential element for the success of management projects. A company must first of all ensure its own economic survival if it is to manage its forest sustainably. Through industrialization, it can increase locally added value, diversify production and reduce risks. In the end, industrialization and management can be seen as two complementary tools serving the same goal.

Considerable progress has been achieved in knowledge of ecosystems and natural resources. A forest management inventory is the key element in long-term planning of activities on a forest concession. The available timber resources and the future potential are now known for the whole FCSM, and its overall dynamics will become known in a few years through the permanent monitoring plots set up. Collaboration with research institutes and other management specialists is vital here. Research leading to a better knowledge of the overall working of ecosystems and the complex interactions of their various components must be promoted at both national and international levels. Optimization of NWFPs is another interesting research subject. Although these products were taken into account in preparatory studies for the management plan, it should be pointed out that they are very much undervalued at present and that traditional knowledge about them is being lost.

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Ngotto forest, Central African Republic

Based on the work of Georges N'Gasse
ECOFAC, Central African Republic

P. Vantomme, log yard

Management of the Ngotto forest is the first pilot experiment in co-management with a logging company and reflects the will of the State in the Central African Republic. This integrated management with timber production as its goal is part of a more comprehensive rural development programme that includes other components (conservation and rural development). Implementation of a pilot project for sustainable forest harvesting in collaboration with a logging company is being carried out on the basis of a management plan and schedule of terms and conditions. The management plan approved by the authorities is now being implemented at field level. The needs of the local population are taken into account and logging is integrated into the local economy. A certification preaudit has been carried out.

DESCRIPTION OF THE NGOTTO FOREST

The Ngotto forest, subject of Harvesting and Management Permit (HMP) 169, is located in the southwest of the Central African Republic, covering an area of 195 000 ha in the Lobaye and Sangha-Mbaéré Prefectures. The permit covers closed forest (60 percent of the total area), degraded forest (17 percent), temporarily flooded forest located along the watercourses crossing the area, and swamp forest along the Mbaéré river. There are also savannah lands bordering the permit area, crop and fallow land, and patchworks of savannah and single-species gallery forest. There are 115 typical forest mammal species in the area (elephant, buffalo, bongo, water buck, leopard, etc.), including eight primate species, while 330 bird species and 72 reptile species have also been recorded and a number of endemic species have been discovered.

THE CENTRAL AFRICAN REPUBLIC CONTEXT AND THE VARIOUS STAKEHOLDERS

Until very recently, the forest sector, which is part of the rural sector in the Central African Republic, had received no attention from authorities or donors, and only in the past ten years has special interest been directed to it. Forest regulations, previously based on the 1962 Forest Code, were modified by the new Law 90.003 promulgated on 9 June 1990 (with an application decree on 9 February 1991). The aim of the new code is to harmonize the demands of making the forest heritage profitable with those of conservation, using forest management to do so. It defines two types of forest: State forests (complete nature reserves, national parks, wildlife reserves, recreational forests, protected areas, reforestation areas and production forests) and community and private forests.

This new Forest Code requires those holding earlier temporary harvesting permits to convert them into HMPs within five years of its promulgation. A permit is then granted for the life of the company in question, committing the holder to follow the provisions of the plan established for the zone being harvested. It is accompanied by a schedule of terms and conditions governing the way harvesting activities are to be carried out within the management framework. Sixty percent of logs must be fully processed on-site. At present, only one of the nine logging companies operating in the southwest of the Central African Republic (the forest zone) is equipped with management and working plans. However, three projects have begun the process: the ECOFAC/Ngotto Forest Programme in 1992, the Salo Forest Management Project in 1994, and the Support Project for the Preparation of Forest Management Plans in 1999. Preparation of the Salo and Ngotto management plans reflects the government's desire to implement the main clauses of current forest legislation.

HMP 169 was awarded to the Industrie Forestière de Batalimo (IFB) company, which operates with the aims of sustainable timber production and biodiversity conservation. The beneficiaries are the company, the State and the local population, including Pygmies (17 villages involved). Several parties are involved in management, including a French research organization (CIRAD Forêt, through the ECOFAC Programme), a private company (IFB), which has undertaken to implement the management plan, the ministry in charge of forests, and donors (ATO, EU). ECOFAC provides the government with a tool for methodological assistance and also a means of applying pressure on the logging company. In addition to HMP 169, the ECOFAC component intervention area also includes a sustainable development sector and the Mbaéré Bodingué Reserve.

The legal basis of the Central African Republic's conservation policy was set up by the Department of Water, Forests, Hunting, Fishing, the Environment and Tourism. Order 84.045 of 27 July 1984 provides protection to wildlife and governs hunting in the country.

MANAGEMENT OF HMP 169 IN THE NGOTTO FOREST

Management of the Ngotto forest is the first pilot experiment in the Central African Republic. HMP 169 was granted to IFB in 1996. Management and working plans were developed through a consensus and implemented by a ministerial decision of 10 March 1998. This management plan is part of a broader ECOFAC programme of rural development covering 800 000 ha, which also has other components (conservation and rural development).

Management of HMP 169 has the main objectives of avoiding the destruction of the stand that would occur very soon if no genuine long-term management were undertaken, improving the living conditions of the local inhabitants, and obtaining a certificate for timber extracted from it. Environmental management measures are also anticipated for the forest resource, and zones with a high biodiversity potential will be identified, studied and possibly allocated to a conservation or specific management block. Implementation of this pilot sustainable forest harvesting project is being carried out in collaboration with a logging company and on the basis of a management plan and schedule of terms and conditions established in advance by the government and ECOFAC. ECOFAC provides the company with better knowledge of the resources, and the company undertakes to follow the sustainable harvesting procedures proposed by ECOFAC.

A map of plant formations was drawn up on the basis of aerial photographs, with the help of a geographical information system. A management inventory was carried out between 1993 and 1995 by CIRAD Forêt (at 1 percent). Stems with a minimum diameter of 5 cm were counted for 25 m on either side of the survey lines. Ecological observations were also made on the basis of rapid surveys of wildlife and flora. The data were then assembled in a report, which was used in preparing the management plan.

The following factors helped IFB, ECOFAC and the supervising ministry to prepare the management and working plans together:

- IFB's commitment to participating regularly in the various discussion meetings that led to a document with the endorsement of all the parties involved;
- IFB's undertaking to implement this plan for the sustainable management of timber resources and the sustainable supply of its Ngotto industrial plant;
- the support of the government department in charge of forest management;
- the fact that the plan does not so far stipulate any silvicultural measures other than harvesting and pre- and post-harvest monitoring of the dynamics of the stand on monitoring plots.

In addition to vegetation type classification of the HMP 169 area, the following elements were agreed on together with IFB:

- definition of harvest potential;
- establishment of the division into felling plots;
- harvesting rules.

A 30-year rotation has been fixed. The permit area is divided into 30 plots so as to limit the area to be covered to ensure the anticipated annual harvest. A processing unit will gradually be brought into service with a development of capacity proposed by the concession-holder. Harvesting began in 1997/98 and the management plan was put into execution by ministerial decision in 1997.

The ECOFAC project monitors the ongoing relevance of the management plan and IFB's harvesting activities. Some of the harvesting clauses are then evaluated by ECOFAC and the administration, and alternatives to inadequate clauses proposed.

Since 1999, 20 monitoring plots have been established on already harvested plots in order to study post-harvest regeneration and the phenology of sapelli seed-trees (the main species harvested). Sociological studies were also carried out in 2002 with a view to taking account of the local population's needs and integrating harvesting activities into the local economy.

Ecorangers have been regularly patrolling the area covered by the ECOFAC component since inception of the HMP 1969 management plan. A preaudit was carried out in 2001 with a view to certification of the company's concession.

ASSESSMENT AND CONCLUSIONS

The Ngotto experiment clearly provides a showcase for the Central African Republic's forest policy. It has been promoted by the forest administration and attracted the attention of donors. The experiment owes its success to ECOFAC's methodological and financial contribution, IFB's undertaking to implement the plan and ensure a sustainable supply for its industrial plant, and the support of the supervising ministry.

The HMP 169 management plan is not a rigid document but is open to adjustment if necessary. Any uncertainty today is connected more with mounting the operation and integrating this new activity into companies' other activities than with the technical content of the operation. There are large areas to be placed under management in a short time and local staff must be identified and trained. Logging companies are not necessarily in a position to make the major investments involved in a management inventory. It is therefore to be hoped that the Special Allocation Account for Forest Development and Tourism will provide financial support and that other donors will provide material assistance to accomplish this task. The support base of the company's staff should also receive special attention in the management plan. Human capacity building should also be promoted with a view to improving productivity. A proposal for a training structure for logging companies' field staff was approved by the Department of Water and Forests and was submitted to AFD in April 2002 for funding.

With regard to the supervision and staffing of operations in the field, it is to be hoped that in carrying out its work the Special Allocation Account for Forest Development and Tourism autonomous structure will take account of the lessons learned from the Support Project for the Preparation of Forest Management Plans. This project proposed national standards for timber resource management to the government in November 2002, and these proposals have since been approved and come into force.

Harvesting should not focus solely on high-value species and the list of marketed species should be expanded. Forest by-products should be incorporated into the management plan, for they can help to reduce the poverty of the local population. Other surveys of topography and indicators of degradation of the upper forest stratum will be made, and evidence of disturbance will be indicated. The impact of silvicultural practices must also be studied and those in tune with maintaining biological diversity recommended. Soil aspects should be incorporated, bearing in mind the many small-scale diamond mines in the region. Hunting and gathering areas for each village and settlement must also be defined. Complementary inventories will make use of the lines used for the forest management inventory. Thus revised, the management plan will then help in developing a forest code.

The aspirations of the local people must be taken into account when preparing the management plan and one of their representatives should if possible take part in meetings held in preparation for implementation of the plan. The local people and the main officers of the logging companies must be made aware and educated about sound practices recommended for sustainable forest resource management. It is also desirable to encourage the emergence of local NGOs so that they can become more involved with this approach. Exchanges of experience among forest managers, the institutions involved and local NGOs should be encouraged.

A committee with a clear mandate should be set up to monitor the viability of the management plan in order to allow a gradual withdrawal of the State. It is thus important to create an independent team to monitor the viability of the concession-holder's management plan.

Other issues still remain, such as the major need for information for all forest stakeholders. The task of providing information, education and communication is without doubt essential, but also problematic, in that it is addressed to the administration, the logging company and the local population, all with very different and sometimes divergent expectations. Most of the people react immediately to the arrival of a logging company by demanding money. And former practices of collusion and petty corruption are still alive today.

In the short term, it is important to obtain certification of timber from the Central African Republic's production forests. "Good pupils" should also be encouraged with incentives, thus spurring on companies that make an effort to implement management plans on their concessions and those that are moving towards secondary and even tertiary processing. Government support is therefore vital in obtaining guarantees in order to stimulate long-term investment in the sector.

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Pokola-Kabo-Loundoungou concession Republic of the Congo

Based on the work of Donatien N'Zala
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The experiment in multiple-use (timber production and biodiversity conservation) management of the Pokola-Kabo-Loundoungou forest undertaken by one of the country's major logging companies and WCS shows that cooperation among a number of partners (government, private sector and NGOs) can assemble the conditions for implementing a management plan incorporating the social, silvicultural and environmental procedures essential for forest certification. The Congo has no experience of applying this type of management and the pilot nature of the multiple-use management described below is thus quite impressive.

J. Blaser

DESCRIPTION OF THE POKOLA-KABO-LOUNDOUNGOU FOREST

The Pokola-Kabo-Loundoungou forest is located in the Sangha and Likouala administrative regions in the north of the Republic of the Congo. It is composed of three stands – Pokola, Kabo and Loundoungou – that have been allocated to the Congolaise Industrielle des Bois (CIB) company. The Pokola and Kabo stands are currently being harvested, while the Loundoungou stand is as yet untouched and being kept for the near future. The three stands cover a total area of 1 150 000 ha. A little over half is on firm ground and is thus suitable for sustained logging. The forest adjoins the Nouabalé-Ndoki National Park. It is part of the Guineo-Congolian forest and encompasses several types: firm-ground forest (sipo, sapelli, dabema, *Gambeya* spp., etc.), swamp forest along watercourses and in temporarily flooded areas (*Uapaca* spp., *Pandanus* spp., *Raphia* spp., etc.), limbali forest (*Gilbertiodendron dewevrei*), secondary forest in previously harvested areas (ilomba, ayous, umbrella tree, etc.) and clearings dominated by Cyperaceae, Poaceae, Hydrocaritacae, Zingiberaceae and Marantaceae beside watercourses. Wildlife in the forest includes mammal, reptile and bird species.

THE CONGOLESE CONTEXT AND THE VARIOUS STAKEHOLDERS

Law 004/74 of January 1974 was partially revised in 1982 (Law 32/82 regarding the Forest Code). At that time, the code was considered very modern, inasmuch as it stipulated sustainable forest harvesting, particularly through the creation of FMUs and the specification of AACs. The aim was to ensure sustainable forest activities by including concepts of rotation, regeneration of potential and on-site timber processing. The FMUs are basic forestry circles for carrying out the tasks of development, management, conservation, regeneration and production.

The Congo began preparing its Tropical Forest Action Plan in 1990, using new economic and environmental data, with the aim of privatization and government withdrawal from the production sector. The plan was completed in 1997 and became a reference point in drawing up the new Forest Code, which was introduced by Law 16/2000 and whose decree of application is now almost ready. This new code covers conservation of forest ecosystem vegetation. Wildlife conservation is still governed by Law 48/83 of April 1983, which specifies hunting seasons and controls such activity. However, a specific law should be drawn up for it in the future. Law 16/2000 covers aspects linked to customary rights over forest lands.

The institutional framework for forest management in the Congo is represented by the Ministry of Forest Economy in charge of Fishing and Fishery Resources. Institutional reform is still under way, with the establishment of such units as the National Centre for Inventories and Forest Management. An official structure in charge of the reforestation of closed forests – the National Reforestation Service – already exists. The forest administration is represented in the regions by the Regional Directorates of Forest Economy, which are responsible for the application of ministerial directives and national forest policy. Executive structures are still centralized in Brazzaville.

Logging rights are granted through an industrial processing agreement, a management and processing agreement, a felling permit for plantations, or a special permit. An industrial processing agreement, which covers 15 years and is renewable, guarantees the right to extract annual quotas of specified species from an FMU, and the holder is obliged to process the logs in a plant of its own. A management and processing agreement carries the same conditions, but the logging company must also carry out specified silvicultural work. It applies to fairly large areas and long periods so that the concession-holder can carry out the management programmes agreed upon, although it cannot exceed 25 years, indefinitely renewable.

Allocation of CIB's concessions is made through an industrial logging contract for three FMUs (Pokola, Kabo and Loundoungou). The company employs roughly 1 350 people and produces 280 000 m^3 of roundwood, 61 percent of which is processed and 19 percent simply cut up as lumber, 16 percent of this for export. CIB is thus responsible for timber harvesting and processing. The forest administration carries out and monitors the forest management plan, while forest regeneration is entrusted to the National Reforestation Service through the Pilot Management, Reforestation and Agroforestry Unit. A partnership has existed since 1999 among the forest administration, CIB and WCS regarding sustainable management of forest concessions in the northern Congo. This collaboration has enjoyed support from ITTA through the Programme for the Ecosystem Management of the Peripheral Zone of the Nouabalé-Ndoki National Park.

MANAGEMENT OF FOREST MANAGEMENT UNITS

The memorandum of agreement among CIB, the Ministry of Forest Economy and WCS was signed on 2 June 1999, creating a favourable context for inception of this management project. CIB has developed the social and environmental aspects as well as the strictly "forest" aspects of the management plans for its three FMUs. This process took the initial form of a feasibility study by Forêt Ressources Management, a French consultancy firm, completed in 2000. CIB then joined together with Tropical Wood Environment to carry out the studies needed as a basis for management plans. WCS assisted CIB on all wildlife management activities. The length of the project (three years) corresponds to the preparation and formulation of the management plan.

The first essential step towards preparation of a management plan is a management inventory covering the whole harvestable area in order to know the current state of the forest and thus assess the resource and how it will evolve in the medium term. The inventory is supported and complemented by forest mapping, which stratifies the area. The management inventory was made by Tropical Wood Environment and financed by AFD, and its distinctive feature is that it takes account of biodiversity. Information about the concessions is collected thanks to forest vegetation type classification using satellite images and aerial photographs, followed by work on the ground (cutting lines, counting trees, measuring diameters, assessing quality and carrying out supplementary surveys, including biodiversity). Forest products other than timber and wildlife are identified. Present and potential extraction zones for these products are then identified with the help of the geographical information system. WCS is now developing a method for making a wildlife inventory and recording hunting activities. Collection and processing of the data then allow maps of the distribution of the resource, for example, to be drawn up.

The forest management plan lays down the technical operations to be carried out. It fixes the AAC, rotation length and other important factors to be taken into account, such as the annual growth in diameter, annual mortality and felling damage. It prescribes an appropriate felling cycle and the division of the FMU into harvesting blocks, divided in turn into annual felling plots. Reduced-impact logging methods will be adopted for timber harvesting. However, there are as yet no official standards for forest operations in the Congo. Reduced-impact logging is still in the experimental stage at CIB while the management plan is being prepared.

The lack of research and the nature of the anticipated harvesting method (reduced-impact logging) perforce require a less intensive type of silviculture. The silvicultural approach adopted consists of improving natural stands (removal of non-commercial species around saplings of commercial species with a diameter of 10 to 40 cm). Post-harvest enrichment operations are also carried out (thinning of strips where seedlings of commercial species are planted). Some seed-trees are also retained.

Wildlife management in harvesting areas focuses on habitat conservation, hunting restrictions, etc. Similar measures can be adopted for NWFPs. NWFP sites are identified and demarcated, and logging of such areas will be prohibited if necessary. Special silvicultural practices will be introduced for the main NWFP-producing species. Identification of sites with high biodiversity can lead to the creation of conservation blocks, while identification of particular ecological risks can lead to protection blocks. Biodiversity conservation or promotion measures will be taken on production blocks, such as the conservation of seed-trees and the retention of aerial bridges between crowns for young primates.

Forest administration agents carry out field-level monitoring of FMUs. Moreover, at project level, a technical consultation committee meets once a year to monitor observance of the contract established among the partners. Forest law stipulates that any holder of a harvesting permit must apply to the forest administration each year for approval of the annual cut. This application must include a map indicating count results and also existing and planned stockyards, roads and tracks. The forest administration is responsible for verifying the accuracy of counts and making sure that limits laid down for annual cuts have been observed. Every three months the logging company has to provide the forest administration with a production statement showing species and purpose. At the end of the year, it also has to submit a summary annual statement of production volumes to the forest administration, indicating species and purpose. Any violation of the harvesting regulations noted by the forest administration is penalized by fines.

The management plans for the Pokola, Kabo and Loundoungou FMUs must be ready by February 2003. Inventory work is at present well advanced. CIB is implementing and financing collective activities of socio-economic interest.

P. Vantomme, FAO. Port de Pointe Noire.

ASSESSMENT AND CONCLUSIONS

The forest management plan is based on available scientific information, but such information is at present inadequate for preparing management plans for closed tropical moist forests, while the planning process is even more complicated for multiple-use management. There is no experience of this type of management in the Congo, so that the pilot nature of the management effort makes it particularly important.

There are as yet no standards governing forest activities. Moreover, research on ecosystem functioning is rudimentary. The weaknesses identified in forecasting tools seriously affect the predictive value of the management plan and need to be addressed. It would therefore seem important to set up permanent observation plots. However, even if harvesting techniques are not yet optimal, current management schemes do have a better knowledge of the environment and resources than previous pilot schemes, which were never actually implemented.

The following innovations in forest practices have been put into practice on these concessions:

- management of this forest incorporates not only the production aspect but also the social and ecological roles of the forest; it also encourages the development of a local timber processing industry;
- biodiversity is taken into account in the multiresource management inventory and wildlife management is incorporated into the whole management process;
- there is close collaboration among the various actors and stakeholders; the forest administration is both partner and facilitator in this process;
- the company is responsible for funding and implementation of the management plan;
- when a large area of forest is harvested under a long-term contract linked to local timber processing, it is easier for the concession-holder to adopt sustainable management practices;
- traditionally marginalized users (Pygmies) also participate in the process.

Information on current management experiments in the country and the region should be disseminated, with a view to improving current practices. The role of the management unit in supervision and internal monitoring of the process should be expanded. Internal incentives are also important and a bonus for good management could encourage companies to adopt sustainable forest management.

Sustainable forest management must be profitable for all stakeholders. In a multiple-use forest, the success of the management plan depends on communication and close collaboration between the parties involved. Solid partnerships, with clearly defined roles and responsibilities, are therefore essential.

However, companies lack skills and professional training, particularly in management units, while managerial staff are not fully conversant with forest management practices. There is no local processing industry with sufficient capacity. The laxity of the forest administration in enforcing the law should also be noted. Apart from the lack of national forest management standards, management costs are fairly high, varying from company to company. On-the-job training of staff in new techniques would appear to be indispensable, but staff also have to realize that forest administration agents are called to become partners or facilitators in a process of co-management.

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PLANTED FORESTS AND AGROFORESTS

Magara-Gashikanwa plantation, Burundi

Based on the work of Diomède Nyengayenge
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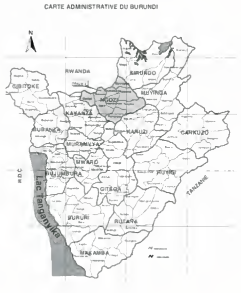
This pioneering example of participatory management of forest plantations in Burundi has the main aim of producing fuelwood and poles. Management is carried out by village communities with the support of an NGO, on the basis of a management contract with the national forest service. It emphasizes the will of the people, particularly the women, to form an association to work together in managing a forest, thanks especially to an agreement on sharing revenue from plantation upkeep work.

Administrative units of Burundi.



DESCRIPTION OF THE MAGARA-GASHIKANWA PLANTATION

The Magara plantation is a planted forest dominated by *Eucalyptus grandis*, covering about 60 ha on Magara hill in Gashikanwa Commune (Ngozi Province) in northern Burundi. It is State-owned, but managed on a participatory basis. An inventory carried out in September 1999 showed that the plantation was then seven years old.

THE BURUNDIAN CONTEXT AND THE VARIOUS STAKEHOLDERS

Forest policy in Burundi over the past 20 years has basically had two main thrusts: self-sufficiency in the supply of wood products, and environmental protection and natural resource conservation. In this context, the country wanted to expand its planted forests to cover 20 percent of its land area (the objective for 2000). With the help of a number of countries (Belgium, France, Kuwait, Saudi Arabia) and international organizations (the World Bank, the European Development Fund, the Aid and Cooperation Fund), the Government of Burundi launched a huge reforestation programme in 1978. The proportion of the country covered by planted stands rose from 2 to 7 percent by 1993, a very positive achievement, but far from the 2000 goal. National parks and nature reserves were also created. Unfortunately, the socio-political crisis that has been ravaging Burundi since 1993 undid many of the efforts so far made, with the disappearance of more than 30 000 ha of planted forest, especially in the north. Nevertheless, the ministry in charge of forests intends to continue the policy, thanks particularly to increased awareness among the local population, empowerment of the local administration, involvement of the local population in all activities relating to development of the forest heritage and, in general, improved management of this heritage.

Against this background, a Special Public Works Programme has sought to involve the local people in management of public plantations, allotting them small blocks of plantation adjoining larger blocks, which themselves adjoin large public blocks. This arrangement is formalized in a written agreement under which the people undertake to maintain both their own plantation and that of the Special Public Works Programme. Unfortunately this approach has not proved successful, because the people were not consulted at the outset. Moreover, the fact that they were not given title to the land on which the plantations were found meant that they did not believe in the validity of their rights over these plantations. Contradictory political messages during the election campaign merely added to the confusion.

In the case of natural stands managed by the National Institute for Nature Conservation and the Environment (INECN), management focuses on expanding income-generating activities around these stands to benefit local inhabitants. The institute has set up buffer zones where the local people can obtain the products they need. In return, it requires their active participation in all forest protection and management activities.

MANAGEMENT OF THE MAGARA PLANTATION

This plantation was established in 1995 by the ministry in charge of forests, with support from the Office of the United Nations High Commissioner for Refugees, on State-owned land where Rwandan refugees had settled. It was intended on the one hand to provide wood products for the refugees and on the other hand to involve them in environmental protection. After they left, activities on the plantation continued under the Support to Environmental Rehabilitation and Management Project.

Management of the plantation began in 1997 and inventories were made in 1999. A management contract binds the local population, the Forest Service and the local administration together, specifying the division of tasks and responsibilities among the partners. The Department of Forests provides technical training for the groups, which carry out all the silvicultural activities stipulated in the contract. The local administration participates in management not in the role of administrative authority but as an associate member. Likewise, the State does not act as an owner but also as an associate member. The target population is the people involved in the three existing groups of forest nursery workers.

Management thus had the aim of developing and ensuring the sustainability and productivity of the plantation by involving the local population in all activities relating to its management and running. The initiative for participatory management of the plantation came from the Support to Environmental Rehabilitation and Management Project. Then, together with the technical forest services, this project carried out awareness activities with the local administration and population. The technical forest services also taught the groups forestry techniques, conducted a socio-economic study on the use of forest products and demarcated and subdivided the plantation into blocks.

The groups made an agreement with the local administration and the ministry on the sharing of costs and returns. Thus, 10, 20 and 70 percent of the products of thinning go respectively to the local administration, the State and the groups. All other outputs are shared among the members of the groups, who can use them for various purposes. Modern charcoal-making techniques are used, and burners have been given training funded by the United Nations Development Programme (UNDP) and executed by FAO. Part of the income received by the groups is paid into the Union for Cooperation and Development in order to build up a fund that will help in resource renewal, particularly through the production of forest and/or agroforestry seedlings.

A simple management plan lists the work to be carried out each year until 2003 on the three blocks (one for each group), with the nature, timing and length of each activity. Each block is divided into four plots, since a four-year rotation has been adopted. Anticipated outputs are posts, poles and fuelwood, depending on the type of management adopted. Silvicultural work focuses on harvesting and enrichment. The initial work concentrated mainly on plantation enrichment, for there were too many gaps as a result of unauthorized cutting and repeated illegal extraction. The seedlings for this enrichment were purchased by the Support to Environmental Rehabilitation and Management Project, which has provided the inputs and labour for the two seasons to date. In the second year the seedlings were produced and planted by the groups, with 30 000 seedlings being planted and 90 000 seedlings and 600 m^3 of fuelwood produced.

Group members performed all the steps in setting up the nursery, preparing the ground and carrying out the planting. With regard to weeds, the management plan anticipates hoeing and clearing of the undergrowth to preserve the species planted. Maintenance of the trees consists of pruning, the selection of shoots and the elimination of poorly developed specimens. Firebreaks between the plots and around the whole plantation protect the trees from fire.

At present, the Forest Inspectorate is responsible for training the groups and fixing the silvicultural calendar. The groups receive support from the Burundi Rehabilitation Programme, working in collaboration with the World Food Programme, which provides them with food-for-work. If a group member break the rules laid down in the management contract, he or she is liable to penalties, ranging up to expulsion from the group.

ASSESSMENT AND CONCLUSIONS

The positive effects of the project are a reduction in thefts of standing trees, availability of fuelwood, replanting of the plantation and its upkeep by the groups, wide-scale involvement of women, the use of empty spaces to grow food crops, and an increase in household income. The people, especially the women, are keen to join forces in an association to carry out forest management activities. It is very important that all stakeholders respect the agreement and that the management committees be transparent in their dealings, and the penalties for contravention of the agreement are therefore an important element. However, there are certain constraints on the project, such as poverty, apathy following numerous appeals, political and institutional instability, and legislative deficiencies.

This experiment in participatory management is one of the first of its kind in Burundi. The involvement of a local NGO in management of the plantation is an example for the country. The agreement on the sharing of returns from maintenance work on the plantation is also a model to be applied elsewhere, in that it reserves a very motivating part for group members. Nonetheless, exchanges of experience with other more experienced groups would be helpful. It would thus be a good idea to organize exchange visits with associations or groups from neighbouring localities. The association should also get into the habit of recording its activities and results in a journal that the people can read. The media should also help in disseminating information.

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Cocoa agroforestry systems, Cameroon

Based on the work of Denis J. Sonwa
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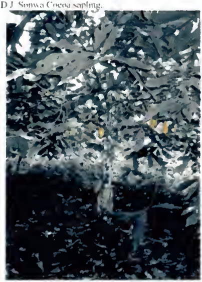
The cocoa agroforestry systems developed over past decades on the basis of local knowledge are helping to meet the needs of small farmers and the ecological requirements of central and southern Cameroon. The structural complexity and ecological and socio-economic sustainability of these systems are described in this contribution. Through constant innovation, cocoa farmers have been able to create a system that is today seen as sustainable.

D.J. Sonwa Cocoa sapling.



DESCRIPTION OF COCOA AGROFORESTS

The group of State-owned agroforests is located in the closed moist forest zone, covering an area of about 140 000 ha in Cameroon's Centre and Sud Provinces. These agroforests border on natural forest stands and like them have a complex structure and significant specific diversity, containing not only cocoa trees, but also species providing NWFPs (*Dacryodes edulis, Irvingia gabonensis, Elaeis guinensis*, etc.), high-value timber species (*Terminalia superba, Chlorophora excelsa*, etc.), exotic fruit trees producing commonly consumed items (*Persea americana, Mangifera indica, Citrus* spp., etc.) and medicinal plants (*Alstonia boonei*, etc.). Most of the agroforests form a continuum, sometimes broken by other types of land use, forming a complex mosaic of ecosystems that help to satisfy the many needs of the inhabitants of the forest zone.

THE CAMEROONIAN CONTEXT AND THE VARIOUS STAKEHOLDERS

In view of the degradation and destruction of forest resources through human activity, the Cameroonian State enacted legislation that envisages the participation of the rural population in forest management and ensures that inhabitants share in benefits from the forest. Agroforestry practices, however, are still one of the main sources of income for farmers. With the passing of Laws 90/053 of 19 December 1990 (granting freedom of association) and 92/006 of 14 August 1992 (governing associations), farmers can now belong to a whole range of farmers' organizations, such as common initiative groups (CIGs), associations and confederations, in order to share their experience and cope with difficulties in managing these agroforests.

The 1994 Cameroonian forest law divides forests into permanent forests and non-permanent forests in which agricultural crops (such as cocoa) can be grown. There are two ministries directly concerned with the management of agroforests composed of cocoa and forest species: the Ministry of Agriculture for cocoa and the Ministry of the Environment and Forests for forest species. Management of the forest zone is based on the southern Cameroonian zoning plan and is one of the components of the strategy to promote economic activities in rural areas. There is thus a synergy with the new agricultural policy in which cocoa cultivation has an important place. The government launched a national plan for agroforestry management a year ago.

The importance of cocoa cultivation has helped the State to set up development projects, the most recent being the Cocoa Development Company in 1974, with the task of developing plantations, the management of these being increasingly delegated to the farmers. The State has also set up the Support to Farmers' Strategies and Professionalization of Agriculture Project, which includes the cocoa sector. This project supports laws relating to the creation and operation of farmers' organizations, which have had a strong influence on plantation management. There is also the National Cocoa and Coffee Office, which is concerned only with cocoa plantation statistics.

The cocoa sector was stressed for many years, since it was seen as playing an essential role in the economy of rural regions. However, the cocoa crisis at the end of the 1990s caused upheavals in plantation management, indicated by the successive diversification of income sources on the initiative of the farmers themselves. The International Institute of Tropical Agriculture (IITA), with support from the United States Agency for International Development (USAID) and chocolate manufacturers, has launched the Sustainable Tree Crop Programme, whose objectives include the long-term maintenance (or increase) of the productivity of perennial crops, including cocoa, while conserving biodiversity. The Sustainable Tree Crop Programme is in its second year in Cameroon and concerns 32 000 cocoa farmers, to whom IITA provides technical and financial support.

Cocoa cultivation has been a major activity in the Centre and Sud Provinces for a long time, and in 1991 it accounted for 139 651 ha. A reference zone of 1.54 million ha covering the two provinces was defined under the Alternative to Slash and Burn Programme, in order to seek sustainable solutions for natural resource management and extrapolate the results to similar zones covered by the Ecoregional Programme for the Humid Tropics of Africa, which covers 11 countries in Central and West Africa.

At the individual and/or farm level, the agroforests are managed by the farmers. Management objectives include the demarcation of landholdings, the constitution of standing capital and income generation thanks to multiple crops. Harvesting is the hardest stage in terms of labour, which is provided by family members and friends within the framework of rural labour associations.

The fall in cocoa prices and the 1992 law on cooperative societies and CIGs have encouraged the creation of associations, especially for marketing and/or the purchase of inputs. Thus, 25 percent of the cocoa farmers in southern Cameroon are now members of CIGs, while another 25 percent belong to informal village-based associations. Many CIGs and associations are joining forces today to pool their experience, market their produce and negotiate partnerships with bilateral and multilateral donors. One of the most active of these associations in southern Cameroon is the Confederation of Rural Organizations for Economic Cameroon, which covers a cocoa-growing area of 350 000 ha, with 300 CIGs and about 20 000 planters. It draws up a calendar of markets with the producers, guarantees producers a minimum sales price and assists in the collection of produce. Partnerships have been formed with bilateral aid organizations (GTZ, USAID, etc.), national and international NGOs and research structures (the Institute of Agricultural Research for Development, IITA, the Centre for International Forestry Research [CIFOR], etc.). Thanks to this programme, there are 300 collection centres for cocoa sales now operational in the Centre and Sud Provinces, run by the leaders of farmers' organizations. Other confederations' (FUPROCAM, FEGAISEM, etc.) have similar objectives and are also active in the cocoa sector.

MANAGEMENT OF COCOA AGROFORESTS

Since the introduction of cocoa at the end of the nineteenth century, farmers have learned to combine traditional forest knowledge with agricultural practices relating to this crop. Through constant innovation, they have used these agroforestry practices to build up systems that are today seen as sustainable. Such systems have the advantage of bringing about a certain balance within households, forming mutual aid groups among planters to carry out the various agricultural tasks, providing money to meet farmers' basic needs and responding to local and world-wide ecological demands.

Management of cocoa plantations does not follow the classic pattern of large-scale forest projects. There is indeed no management plan in the usual sense of the term. Rather, farmers practise a type of management that can be described as heritage-focused, in the sense that the agroforests are handed down from father to son and the son's duty is to perpetuate this family wealth. The wide range of species managed and goals pursued is a positive element justifying the farmers' attachment to these ecosystems and the flexibility of the management practised.

There are a certain number of stages in establishing a cocoa agroforest. After the trees have been felled, the planter grows food crops for three years, although an association with cocoa can be started in the first year. Certain plant species are retained on the plots to provide shade for the cocoa trees. The investment is thus very low in terms of finance and time, when compared with classic forestry projects. The whole family is involved in management, inasmuch as the cocoa is managed by the men, while the women and children are responsible for NWFPs and fruit trees. The tools used are locally made and therefore have a relatively low environmental impact. Upkeep includes weed control, thinning and protection against brown rot. One of the most important elements in the sustainability of these ecosystems is the possibility of controlling pests by using tree bark or by varying tree density. The bark of certain plants (*Guibourtia tessmanii*, *Erythropheleum ivorense*, etc.) is used to control brown rot, and this has a much lower negative impact than the massive use of synthetic pesticides. The plantations are fertilized by falling leaves from cocoa and companion trees. Weeds are reduced by the presence of shade in the first years.

Regeneration of cocoa trees is generally achieved through selective replanting (replacing one cocoa tree with another), partial replanting by block (following disruptions such as drought) or coppicing. Enrichment with companion trees is generally achieved through retention or through the introduction of diaspores. Spontaneous regeneration sometimes explains the propagation of certain companion species in cocoa plantations.

Economic assessment indicates that this agroforestry system is still financially viable despite the cocoa crisis. Moreover, timber from cocoa plantations is used in building houses and supplies the local timber trade. The combination of several companion species minimizes both the economic risk (avoiding dependence on one product) and the ecological risk (for example attack by pests). Income from the plantations is shared out among the households and meets the basic needs of many small farmers in southern Cameroon.

The traditional practices of "forest domestication" mean that the characteristic elements of semi-deciduous forests, evergreen forests and intra-forest savannah can be conserved in the same ecotone (forest/savannah). The introduction of new individuals helps to enrich both the diversity of microecosystems and also inter- and intra-specific diversity. The trees grown with cocoa form a multistorey structure in these agroforests similar to that of forests, thus fostering the conservation of plant, wildlife and microbiological diversity. Moreover, these systems are the land use that contains the most carbon per square unit (outside primary forest), thereby reducing the greenhouse effect.

ASSESSMENT AND CONCLUSIONS

Many cocoa agroforest management practices have today been recognized as sustainable and hence as suitable for replication elsewhere in Central Africa for agroforestry systems based on perennial crops (coffee, rubber, etc.). This applies, for example, to the methods used in establishing agroforests, their upkeep and regeneration. The readiness to accept innovation is, however, an important factor in their replication in other zones. Knowledge of farmers' practices and management techniques is essential, which means that the participatory approach is an important element in formulating agroforestry research and development projects.

The shortage of quality seed is a major handicap to the development of agroforestry systems. Multiplication of healthy seedlings of both cocoa trees and companion species is a priority in developing plantations. Domestication of companion tree species while taking account of farmers' preferences is seen today as a way of reducing poverty in Central and West Africa. Similarly, the development of cocoa tree by-products is still in the research stage and the integration of small animal husbandry into cocoa plantations has not yet been developed.

The certification of agroforestry system products should be encouraged. The foundations for this were laid in 2001–2002 with the development of a Production and Marketing

Information System covering 5 percent of the country's cocoa production. This system is still in its early stages, but it has given encouraging results regarding system management, the capacities of associations and marketing costs, and should be extended to other agroforestry components. The promotion of cocoa agroforest management under the Global Compact initiative (launched on 26 July 2000 by the Secretary-General of the United Nations) should also be encouraged.

The synergy of interests within the Sustainable Tree Crop Programme should be encouraged. Capacity-building in rural associations should be a priority, for these associations can provide access to producers and disseminate innovations. Exchange fora for manufacturers, producers, etc. should also be regularly organized.

If systems are to be better managed, emphasis should be placed on:

- taking account of local knowledge and rural dynamics;
- selection and multiplication of quality cocoa and companion tree varieties;
- domestication and marketing of NWFPs;
- development of by-products;
- promotion of the system's products for the biological and/or certified product market;
- carbon sequestration and conservation;
- promotion and maintenance of synergy and feedback among research and development projects in the agroforestry sector.

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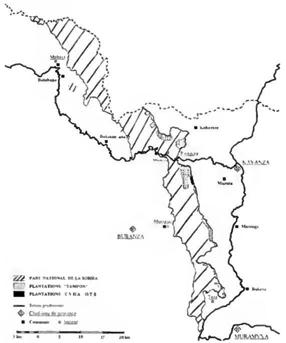
PROTECTED AREAS

Kibira National Park, Burundi

Based on the work of Cyriaque Nzojibwami
Parks for Peace Project, National Institute for Nature Conservation and the Environment,
Burundi

This national park contains Burundi's only montane forest. Village communities participate in its management through a community conservation plan, which is a pledge of partnership among the people, the administration and conservationists. In addition, a new consultative body, the "local park watchdog committee", set up in each of the communes around the park, appears to be a solution to the question of how to involve the people in managing the park. This management scheme is part of a process under which conservation is incorporated into the consolidation of peace in Burundi.

Kibira National Park.



DESCRIPTION OF THE KIBIRA NATIONAL PARK

The Kibira National Park straddles four provinces in Burundi and has an area of 40 000 ha. It is composed of montane rain forest containing several vegetation strata: *Entandrophragma excelsum* and *Parinari excelsa* stands, *Parinari excelsa* var. *holstii* and *Polyscias fulva* stands, *Polyscias fulva, Macaranga neomildbraediana* and *Syzygium parvifolium* stands, *Hagenia abyssinica* and *Faurea saligna* secondary forest stands, *Philippia benguelensis* and *Protea madiensis* high-altitude stands on ridges, *Arundinaria alpina* (pure bamboo) stands, stands along thalwegs and stands formed by recolonization of previously cultivated and grazed land. It is a zone rich in both animal and plant biodiversity: 644 plant species have been found in the park, as well as about 98 species of mammal (primates, servals, African civets, etc.). Bird life is also rich and varied, with 43 families and more than 200 species identified.

More than three-quarters of the water in the country's largest dam – providing more than 50 percent of the hydroelectric energy consumed – comes from this forest. Thus the park, situated as it is on the Congo-Nile ridge, plays a fundamental role in regulating the hydrological system and protecting against soil erosion.

THE BURUNDIAN POLITICAL CONTEXT AND THE VARIOUS STAKEHOLDERS

The Forest Code promulgated in 1985 (Law 1/02 of 25 March 1985) provides the basis for the various Burundian laws on forests, notably Law 1/010 of 30 June 2000 containing the environmental code for the country. The Kibira National Park was granted legal status in 2000 with Decree 100/007 of 25 January, establishing the park and four nature reserves.

The Kibira forest at present comes under the Ministry of Regional Development, the Environment and Tourism and the National Institute for Nature Conservation and the Environment (INECN). Management has led to the subdivision of the park into small management units, i.e. four sectors (one sector for each province) and 32 subsectors. It has a park supervisor and four sector heads, while each subsector has a forest warden and an assistant. Lastly, the INECN and the Parks for Peace Project have established watchdog committees elected by the people at various levels – hills (the smallest administrative unit), sectors, zones and communes. The park supervisor supervises all activities in the park, the sector heads implement them in their respective zones, and the watchdog committees closely monitor the way the park is managed. Thus, the INECN, the local administration, the local population and the watchdog committees are the main actors in park management. Nearly 50 000 people from communes adjacent to the park are involved directly or indirectly in management of the park.

MANAGEMENT OF THE KIBIRA NATIONAL PARK

Until 1933, this forest was a hunting reserve of the Kings of Burundi. The local people respected the forest, investing it with a magical power. Rights of use for livestock grazing and the gathering of forest products were recognized. The sacred character of the forest, even prior to the colonial era, helped to conserve it. Between 1933 and 1980 Kibira was classified as the Congo-Nile Ridge Forest Reserve, first under Belgian rule, then after Burundian Independence in July 1962. Only the extraction of high-value timber (*Entandrophragma excelsum* and *Prunus africana*) was regulated and controlled.

Between Independence and 1980, the right to allocate new land for cultivation within the defined boundary was abolished, although grazing rights were retained.

The Kibira management project dates from 1979, with the objectives of controlling the erosion of slopes, regulating river flows, and promoting ecotourism. At that time Burundi obtained funding from the Aid and Cooperation Fund and the Central Fund (now the French Development Fund). In 1979, 2 000 ha were used to establish planted forests in the park. Between 1980 and 1993 Kibira was officially designated a national park, and management was initiated in 1982, with zoning, development of tourist and educational paths, camping grounds and shelters, preparation of community conservation plans following participatory diagnosis, and establishment of local watchdog committees at various levels. The park's boundaries were redrawn between 1980 and 1985 and tracks opened within it. In 1993 the political crisis deteriorated into armed conflict. Some of the monitoring staff abandoned their jobs and some of the local inhabitants seized the opportunity to cut timber and clear some areas of the park.

Partnership with the local population.

The Kibira National Park management plan has been in existence since 1996. It goes into detail regarding the planted forests that act as buffer zones and the various silvicultural tasks to be carried out until 2023, and also sets out production norms and lists the types of forest product to be harvested. It provides a detailed map of plots for each planting season, a schedule of activities for each hill and plot, and a programme of clearing and harvesting for each year and plot.

A vegetation map was prepared by the SCETAGRI consulting firm from 1984 photographs, and this allowed a census to be made of plantations established prior to the park's creation. Researchers from the University of Burundi and other institutions have also worked on the vegetation of the park. Different activities were defined according to the particular characteristics of certain zones. Harvesting is carried out on 2 000 ha of plantation (*Pinus*, *Cupressus*, *Grevillea* and *Eucalyptus*). However, the main purpose of the park is ecotourism, as it is the only montane forest in Burundi. Twenty-five km of tourist trails have thus been opened up and developed on the steep slopes. Three camping areas have been prepared. Tourist activities help to raise the awareness of visitors regarding nature conservation. Scientific activities lead to long-term conservation of distinctive and endemic plant and/or animal wildlife.

Working with the INECN, the Parks for Peace Project is in the process of setting up a new type of consultative body, the "local watchdog committee", in all the communes around the Kibira park. These committees are already up and running in two communes.

The people themselves were worried by certain destructive practices being adopted in the park and asked to participate in denouncing these and in the seizure of products stolen from the park. The INECN and the Parks for Peace Project welcomed this initiative and asked the people to elect representatives, from hill to commune level. Establishment of these committees first entails a participatory diagnosis in which extension workers meet the people at hill level. The people of each hill then elect a committee of ten people, who in turn elect a committee of ten people per sector. These sector committees include both men and women and a representative of the Batwa (the indigenous people). Representatives from the various sectors then elect a committee of ten to represent the zone. A community plan of action is then drawn up on the basis of the five main constraints identified by the zone committees, which draw up a community conservation action plan for the park at commune level. This community conservation action plan is a pledge of partnership among the local people, the administration and conservationists, and is used as the basis for the activities of all those involved in conservation (NGOs, private sector or donors).

Some activities are permitted at park level within reasonable limits (gathering fuelwood and NWFPs). However, regulations seem to be needed to govern harvesting of the most widely used forest products, such as live wood and bamboo. Trees may not be felled in the park without the warden's authorization. In order to address the problem of fires caused in the process of honey gathering, beekeeper's groups have carried out trials with a view to reconciling their needs and those of the park. Hunting has been forbidden in Kibira since 1980, but poaching persists.

The formation of ecological-type groups around the Kibira park is encouraged, and the people are starting to join forces to ask for support in improving their living conditions. The INECN and the Parks for Peace Project are sensitizing the various services working around the park so that they give special attention to the local population, for conservation of the park depends on improvement in their living conditions.

In consultation with the elected committees, a warning system has been developed and consideration given to a code of conduct that could be adopted around the Kibira park. A person or a group of people who becomes aware of a violation advises the watchdog committees, who in turn inform the local-level wardens, who can in turn inform the administration and the police to request assistance. The INECN is the centre for all information and finds solutions to the various violations. These decisions must be transmitted down to the lowest level, i.e. the local population. Those committing violations pay fines and the object of the violation is confiscated.

ASSESSMENT AND CONCLUSIONS

The first requirement for preparing the Kibira National Park management plan is a real national political will – and also an international one. Kibira is one of the rare African forests located in a heavily populated region undergoing armed conflict. A return to peace is essential, and the international community has a role to play in resolving conflicts. In a country as overpopulated as Burundi, conservation also entails the consultation and empowerment of all actors.

Donors' interventions do not always take account of the regional or cross-border character of natural resources. The Kibira National Park borders on the Nyungwe forest in

Rwanda, and Rwandans cross into the park to clear land for agriculture or search for gold. The intervention strategies and activities of the various technical services involved in biodiversity conservation therefore need to be coordinated and harmonized at regional level. Similarly, an efficient regional-level coordination service for the management of protected areas is needed.

A system for the exchange of information between countries is also essential. A forest symposium is organized in Burundi every ten years. A programme is needed to improve and update information and knowledge for conservationists at all levels – which would also allow the approaches of different countries to be harmonized. Local NGOs are themselves recent and not yet in a position to foster this type of initiative.

A management plan must respond to the ecological, economic and social concerns of the people living around the park. It has been recognized that sustainable forest resource management cannot succeed without the participation of the local population, and there is no such participation without dialogue and the sharing of information and experience. Identification of partners and good communications are preconditions for conserving the biodiversity of the Kibira National Park. Moreover, a management plan should not be static, but must be revised when necessary. At the park level, new boundaries should be fixed, the INECN's capacities strengthened to ensure park management, and current initiatives (for example the Parks for Peace Project) supported. Ecotourism infrastructures need rehabilitation. Inventories should be made of species of economic interest that are in danger of disappearing and of the plants most used in traditional medicine. It is also important to record all consumable and usable products and support the programme for the domestication of indigenous species. An inventory of wildlife and a study of its dynamics would also be helpful.

Supervision and monitoring must be carried out by park officers and rangers with at least a minimum of resources (which do not as yet exist). The other partners who could undertake monitoring are the local population through their elected committees. Setting up local watchdog committees thus seems the best way of involving the local population in management of the park.

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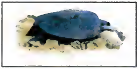
Luba Crater Scientific Reserve, Equatorial Guinea

Based on the work of Paulino Bololo Ekobo
Equatorial Guinea Institution

Management of the Luba Crater Scientific Reserve helps to ensure the conservation of its remarkable biological wealth, encompassing ecosystems and habitats unique in Equatorial Guinea. The management system described in this example was established in 1995 by an NGO and entails a biodiversity conservation programme focusing on protection of the green turtle.



DESCRIPTION OF THE LUBA CRATER SCIENTIFIC RESERVE

The Luba Crater Scientific Reserve has an area of 51 000 ha and is located on Bioko Island in Equatorial Guinea's Bioko Sur Province. The main forms of vegetation are low- and medium-altitude closed rain forest (up to 700 m) with great specific diversity, montane forest (between 700 and 2 000 m) with an abundance of creepers and epiphytes, high-altitude Araliaceae forest, Aricaceae forest and secondary formations. Its position on an island makes this reserve a refuge for many species of terrestrial and aquatic wildlife. The zone has a great density of primates, some of them endemic, and also shelters one of the last remaining populations of drills. Green turtles can be observed in the beach areas. The Luba crater has striking landscapes, with waterfalls, black sand beaches, etc.

THE CONTEXT OF NATURAL RESOURCE CONSERVATION IN EQUATORIAL GUINEA

Various laws have been promulgated in Equatorial Guinea to ensure the conservation of forest resources. For example, Law 8/1988 of 31 December 1988 lays down regulations for forest wildlife and protected areas, while Law 1/1997 of 18 February 1997 deals with the use and rational management of forests, establishing two forest categories: protected forests (a system of protected areas) and production forests intended for the sustainable production of forest products. The latter law also specifies a maximum production volume in order to ensure sustainability, as well as setting up the National Institute for Forest Development as an autonomous organization responsible for sustainable forest development. Statutory Order 6/1990 of 22 August 1990 established the National Committee for Environmental Protection, which has the primary task of applying the resolutions of the Conference of Heads of State on the Environment and the United Nations Convention, as well as other conventions signed by Equatorial Guinea on similar subjects. Law 4/2000 of 22 May 2000 deals with protected areas and is intended to create a national system of 13 such areas, covering a total of 586 000 ha. It distinguishes four categories of protected area: scientific reserves, national parks, natural monuments and nature reserves. It also establishes the National Institute for Protected Areas as an autonomous structure for the management of the national system and guarantees the participation of the local population in the management of these areas.

Protected areas come under the Ministry of Forests, Fisheries and the Environment, which is also responsible for forest resources throughout the country. The General Directorate of Forests is responsible for implementing forest development policies and strategies, working in collaboration with the National Committee for Environmental Protection, the various ministerial departments involved in forest resource management, national and international scientific institutions, and bilateral and multilateral organizations. NGOs also play a considerable role.

A conservation and ecodevelopment programme was started in the El Sur Protected Area on Bioko Island in 1995, thanks to a Spanish NGO, the Asociación Amigos de Doñana (AAD). An initial analysis of the various areas covered by Law 8/1988 was carried out by the Forest Planning Bureau of the Ministry of Forests, Fisheries and the Environment in 1996. In 1997, the Conservation and Rational Use of the Forest Systems of Equatorial Guinea Project revised and expanded on earlier studies with new field information and the interpretation of remote sensing images. This resulted in a detailed analysis of areas considered critical for the conservation of biological diversity, the maintenance of ecological resources and a rational and sustainable approach to forest species and forest ecosystems, including those found in the Luba crater zone.

However, only two protected areas in the national system have received any real attention with regard to protection, conservation and management. These are the Monte Alén National Park (under the ECOFAC Programme), established in 1996, and the Luba Crater Scientific Reserve. AAD is responsible for conservation, education and awareness-building for the latter. The great biological wealth of the Luba crater has made it the subject of many studies by a variety of institutions. In particular, the National University of Equatorial Guinea and Arcadia University in the United States have been carrying out a joint research programme on primate populations since 1996.

The Luba Crater Scientific Reserve affects 7 200 people within its borders and in adjacent villages. The main activity of the local population is agriculture, using traditional methods and intended mainly for household consumption. There are also cocoa plantations.

MANAGEMENT OF THE LUBA CRATER SCIENTIFIC RESERVE

The management of protected areas is a new activity in Equatorial Guinea. However, studies have been carried out since the 1980s, especially by the Spanish aid organization and IUCN, with a view to identifying areas that should be declared protected, and these areas included the Luba crater because of its great biological wealth. The area was accordingly included in Law 8/1988 as a protected area. The main objective of management of the reserve is to ensure the conservation of its exceptional biological wealth, with ecosystems and habitats unique in Equatorial Guinea. In 1995, AAD launched a conservation programme focusing on a series of studies of species of exceptional biological interest, especially animals, implementation of an ecotourism programme, domestication of forest animals and environmental education. In 1997 the NGO submitted a management plan for the area to the forest administration for discussion. After this it carried out activities under its initial programme and sought to set up awareness programmes on the conservation of turtles and to build facilities for tourist development. However, its activities were suspended in 1998.

Law 4/2000 requires the preparation of a master plan for each protected area, to serve as a technical and administrative tool in specifying activities and associated protection measures. The law calls for the establishment of a managing committee to ensure the participation of the local population in the management of protected areas. Although AAD submitted a provisional working plan for the reserve to the administration in 1997, the master plan required by law still does not exist. No management plan has yet been implemented in Equatorial Guinea, apart from that for the Monte Alén National Park. However, a provisional management plan for each protected area has been prepared as part of the Conservation and Rational Use of the Forest Systems of Equatorial Guinea Project. This is the only technical document available for the management of protected areas and includes a diagnosis of each zone (state of conservation, problems noted and level of knowledge). Management covers objectives, zoning, infrastructures, anticipated activities, studies and planning. The diagnosis of the Luba Crater Scientific Reserve indicates a good state of conservation and describes all the activities and practices pursued in the zone.

Apart from ensuring conservation of the area's exceptional biological wealth, the objectives of the working plan include a ban on building access roads to the reserve from anywhere along the coast, a reduction in pressure from housing – or indeed its elimination – throughout the reserve, encouragement of the rehabilitation of agricultural zones, detailed demarcation of the traditional zone assigned to the local population, establishment of ecotourism facilities compatible with conservation of the area and facilitation of collaboration with any scientific expedition. Zoning has allowed definition of a traditional zone for the people, a special zone for tourist facilities, an open zone with trekking trails and a restricted zone covering the rest of the reserve.

The plan anticipates an agreement with AAD, under which management plans and any revision must be approved by the authority responsible for protected areas, while the NGO has autonomy in carrying out work within the reserve. The NGO has built premises to provide an institutional presence, coordinate activities, receive visitors, etc. Activities so far have focused on identification and elimination of house-building, patrols, re-establishment of tourist trails, promotion of scientific research, establishment of good relations with the local people and study of how they can participate in ecotourism, etc. Research includes study of the local population and sacred sites.

ASSESSMENT AND CONCLUSIONS

In recent years there have been some important events fostering the rational use, protection and conservation of natural resources in Equatorial Guinea, such as Law 4/2000, creating a national system of protected areas and establishing various categories of protected area. Apart from the Monte Alén National Park, the Luba Crater Scientific Reserve is the only one that has been the object of conservation activities. Since 1995, AAD has implemented a very broad programme of biodiversity conservation, centred on the protection of green turtles. However, the absence of an institution with responsibility for managing the reserve has prevented proper use of the infrastructures already established and effective coordination of the activities of the various groups and

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institutions active in the zone. On the contrary, activities running counter to the aims of the protected area have taken place (such as turtle catching).

The many studies carried out in the zone have led to fuller knowledge about it and its great biological wealth. However, all this information is scattered among various institutions, so that access is not easy – although the centres and office that have been built should facilitate such access.

If the status of the Luba Crater Scientific Reserve is to be improved, the National Institute for Forest Development, which is responsible for the management of protected areas, must be got up and running. The agreement with AAD should also be re-established, or a new agreement made with another NGO with experience of management and the preparation of a master plan in the zone – although the National Institute for Forest Development would retain the right of control and supervision of the NGO's activities. A special control and monitoring body should also be set up.

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Lossi Gorilla Sanctuary, Republic of the Congo

Based on the work of Norbert Gami
FTRP, the Congo

This pilot experiment in joint sustainable management of the "gorilla resource" brings together conservation and the local population's participation in management of this gorilla sanctuary. The advantage of a multidisciplinary approach to the sustainable development of a forest zone in Central Africa is described in this example, especially the anthropological approach in establishing and maintaining partnerships among the various stakeholders. The experiment, so far unique in the subregion, deserves encouragement and should be adapted to other similar contexts.

N. Gami, APFT, Congo, *Gorilla gorilla gorilla*

DESCRIPTION OF THE LOSSI GORILLA SANCTUARY

The Lossi Gorilla Sanctuary covers 35 000 ha on the edge of the Odzala-Kokoua National Park in the West Cuvette administrative region of Mbomo District in the northwest of the Republic of the Congo. The vegetation consists of a mosaic of closed semi-deciduous forest (7 percent of the total area), sparse Marantaceae forest on dry land (66 percent), with secondary vegetation on the sites of former villages, while swamp forest accounts for 26 percent of the total area, shrub savannah 0.6 percent and thickets 0.2 percent.

Besides gorillas and chimpanzees, which are the reason for the sanctuary's creation, the zone is rich in other wildlife (elephants, duikers, buffalo, etc.). Lossi offers exceptional conditions with very little pressure on gorilla and chimpanzee populations from hunting, a high density of gorilla groups and periodically flooded forest and other swamp zones, which makes it easier to monitor these groups.

THE CONGOLESE CONTEXT AND THE VARIOUS STAKEHOLDERS

The creation of the Lossi Gorilla Sanctuary by the local people had the advantage of a legal context favourable to this type of initiative. At that time, the Congolese Forest Code

(Law 16/2000 of 20 November 2000) was being overhauled in order to take account of the various factors involved in sustainable participatory management of forests. The sanctuary falls into the category of special reserves with the aim of protecting typical animal communities (in this case *Gorilla gorilla gorilla*) and the biotopes essential for their survival.

The forest is officially managed by the Ministry of Forest Economy in charge of Fishing and Fishery Resources through the Warden of the Odzala-Kokoua National Park, who is appointed by the Directorate of Forests and Protected Areas. The warden handles relations with the various administrative offices and oversees the good running of the forest. At field level, the ECOFAC Programme, with funding from the EU, supports research on habituating gorillas to a human presence and on the involvement of the local population. The ECOFAC Programme has been working in six protected areas in Central Africa since 1992 to promote sustainable ecosystem management and has been developing a participatory approach (or co-management) involving the various stakeholders. The EU programme The Future of Tropical Rainforest Peoples (FTRP) has also contributed to the process of effective joint management of the sanctuary through the mediation of an anthropologist. ECOFAC is currently meeting the cost of the wages of the sanctuary's guides and trackers and suggesting improvements to the sanctuary.

The local people, especially those who had rights to the Lossi lands and who gave up their land for conservation, have formed a Lossi Land Rights-holders' Association, which will be represented on the board of directors in order to take part in any decisions regarding management of the sanctuary. At present the association controls access to the sanctuary for gathering and seasonal fishing and is responsible for management of the tourist site and upkeep of the access track. There is no active NGO in the zone with which the association could work. Three villages, Lengui-lengui, Ombo and Mouangui, are at present affected by the Lossi Gorilla Sanctuary.

N. Gami, APFT Congo. Ikinda initiation rite of the Mboko.

THE EXPERIENCE OF THE LOSSI GORILLA SANCTUARY

An experiment on the habituation of lowland gorillas to the presence of humans has been taking place in the Lossi forest since 1992, and two groups of gorillas have become accustomed to the presence of humans through the work of two primatologists. This was the local population's main reason for creating a sanctuary whose primary purpose is game-viewing tourism. The people sent a letter to the Minister of Forest Economy explaining why they wanted this forest zone to be declared a reserve. EFOFAC requested the FTRP programme to carry out an anthropological feasibility study for such a sanctuary. This study permitted both identification of the lineages and families with land there and also their organization into associations. It also helped in finalizing the statutes and internal regulations of the sanctuary and the association and in formalizing agreements. This framework then made it possible to advise the local people on setting up community activities. The feasibility study indicated that they needed to harvest certain forest resources, especially NWFPs, seasonally.

The official decree establishing the gorilla sanctuary was signed by the Congolese Government on 10 May 2001. It clearly shows the authorities' desire to implement natural resource co-management with the local people. The decree confirms the boundaries of the protected area according to the wishes of rights-holders in the Lossi lands, taking into account their need to harvest natural resources and also the concerns of primatologists, the ECOFAC Programme and the Ministry of Forest Economy regarding biodiversity conservation in the area, especially focusing on gorillas (a fully protected species in the Congo). Management of the sanctuary had begun in 1994, however, in order to promote game-viewing tourism and recreation, with the following features:

- action to make a habituation zone for the gorillas secure and to raise the awareness of the local population regarding the importance of biodiversity and the need to conserve it;
- creation of alternative activities to hunting for the people living in the zone;
- research on gorilla groups and regular censuses of gorillas;
- involvement of the village community in management and the sharing of benefits from tourism activities.

This pilot experiment is notable first for the fact that rights-holders decided to give up their ancestral lands to create the sanctuary and then for their involvement in managing the gorilla sanctuary in order to reap the financial benefits generated by ecotourism – income that is then used for community initiatives. Those with customary rights over Lossi lands were identified in 1996. The boundaries to the zone were fixed in the same year by the local people with the supervision of the FTRP anthropologist and support from primatologists and the head of the ECOFAC-Congo component. The participatory mapping technique allowed rights-holders to define the zone to be declared a sanctuary, while keeping a large zone for subsistence activities.

The management master plan for the sanctuary was prepared in 2000, with the aims of assessing the various resources, the extent of the various forms of local use of forest resources, the impact of such use on the resources, the constraints on development that the sanctuary would face, and the potential impact of harvesting of the peripheral forest area on resources within the sanctuary.

An inventory of plant and animal wildlife resources and a survey of human activities were then carried out. A new computer tool, the cybertracker, was used to collect and analyse inventory data. This system uses a pocket computer (or palm pilot) linked to a global positioning system to collect data in the field and an automatic data transfer system to transfer data from the pocket computer to the databank on a desktop computer. The cybertracker allows mapping and the export of data in Excel format, either for statistical analysis or to represent them in a more powerful geographical information system. Indices of wildlife abundance, human activity and trees with fruit, commercial or medicinal value were obtained through this work. Thus, areas of activity by the local population within the sanctuary were mapped so that the various stakeholders can reflect better on the management techniques to be adopted.

Management and operational proposals were made in the management plan: registration at the Lossi Land Rights-holders' Association office and the base camp of rights-holders carrying out activities in the sanctuary, questioning and expulsion of anyone found in the sanctuary with a weapon or illegal merchandise, setting of calendars of extraction and rotations for fishing areas and gathering areas. Certain conservation measures are anticipated, such as the creation of a buffer zone on the borders of the sanctuary. Furthermore, all rights of use within the sanctuary are suppressed, although exemptions are granted to Lossi land rights-holders for certain uses that have no negative impact on the gorillas. No authorization for logging, mining or agriculture may be granted within the sanctuary. The association is responsible for sensitizing other local inhabitants and for the prevention of poaching.

N. Gami. APFT Congo. Transport of bark for construction of tourist huts in Lossi.

The association has built two tourist cabins and a restaurant for tourists. It is in charge of managing the tourist site and receives the income from this activity. The village community in the wider sense maintains part of the access track to the sanctuary, and this work is a condition for being chosen as a member of the porterage group that carries tourists' luggage from the village to the sanctuary. Five local trackers have been trained, and two of them are now helping others in Gabon to learn from their experience.

Patrolling of the sanctuary is a major concern for the various partners. The management master plan stipulates two teams posted at the two main entrances to the sanctuary, two or three roving teams and an officer in charge of anti-poaching measures.

In 2000, the association mobilized the inhabitants of the three nearby villages to take part in carrying water and making bricks to build a dispensary. A health worker has been trained with support from the ECOFAC Programme.

ASSESSMENT AND CONCLUSIONS

The model of the Lossi Gorilla Sanctuary is interesting inasmuch as it combines conservation and the participation of the local population. It was established thanks to a forest legislation and a political will aimed at encouraging the local population's involvement in sustainable forest resource management. The strong motivation of the forest population should be stressed, and also the dialogue and mutual understanding among the various stakeholders. Another factor in the success of the programme is the location of the sanctuary far from cultivated village land so that it does not impinge on agricultural and hunting territory. Furthermore, there is a visible "gorilla product" that the local people can see and that can be marketed to tourists, and a slogan has been invented: "A live animal brings in more than a dead one."

The continuing presence of an anthropologist in the field has allowed a better understanding of the various conflicts of interest. At present, the Lossi Land Rights-holders' Association itself handles certain conflicts. The anthropological feasibility study identified the target group, i.e. the true landowners or those holding rights over the land on which the sanctuary has been established.

If forest management is to be profitable to all stakeholders, the start-up team must include the main interested parties, as must the consultation framework. A facilitator is needed to coordinate the various parties' activities. There must be a written management agreement clearly defining not only the rights and duties of each party, but also the procedures for dividing the benefits generated by the jointly managed resource. Representatives of the village community must take part in the meetings held to close off the protected area. The political and administrative authorities must be brought to sign and publish a decree creating the conservation zone so that it is properly formalized. This legal basis will then allow stakeholders to defend their rights in case of litigation over any illegal use of the zone by a third party.

Certain elements can be adapted and applied to other conservation forests:

- training of young trackers and guides from the locality;
- long-term engagement of a facilitator familiar with the sociocultural context to train the local community and facilitate relations among the various parties;
- establishment of a village association capable of representing the community in dealings with the other stakeholders;
- identification of an economically viable tourist product to be developed, so that the local people feel involved;
- presence of an international NGO, programme or project that will provide technical and financial support in the early stages of the initiative;
- demarcation of the zone to be exploited with the people concerned in order to avoid subsequent conflicts over the use of resources and the goals of conservation;
- establishment of a framework for consultation and coordination among the various stakeholders for management of the zone, development of community initiatives and resolution of conflicts.

However, the Lossi Land Rights-holders' Association is not yet able to stand on its own feet and still needs technical and financial support from the ECOFAC Programme. There is little exchange of experience between the association and other projects in the country or associations working in the subregion. There is an urgent need to set up a coordination and management committee. The conclusion of a management agreement between the association and the other stakeholders is also vital. It is equally important that the other parties be willing to help the association to become independent and especially to seek supplementary funding.

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COMMUNITY FORESTS

Campo-Ma'an forest, Cameroon

Based on the work of Guillaume Akongo
Campo-Ma'an, Cameroon

This example illustrates efforts made to reconcile a biodiversity conservation objective with the objectives of rational and sustainable use of natural resources and economic development of the Campo-Ma'an zone. Efforts to achieve these three objectives involve all the stakeholders, especially the local people and commercial operators in the area (logging companies and agro-industries). Creation of a technical operational unit (TOU) has improved coordination in the allocation of land to these different goals: the Campo-Ma'an National Park, FMUs and a multiple-use zone.

DESCRIPTION OF THE CAMPO-MA'AN FOREST

The Campo-Ma'an TOU covers roughly 770 000 ha and belongs to the State. It is located in the extreme southwest of Cameroon, spreading over three departments: Océan, Vallée du Ntem and Mvila. The Campo-Ma'an region lies in one of the great centres of African biodiversity and possesses a unique biological wealth, with a dense and varied vegetation (more than 1 500 plant species). It is a transition zone between the southern and northern Atlantic forest zones and contains many species that reach either their northern or southern distribution limit here. There are also many endemic (45) and rare species, while the large amount of azobé indicates human presence in the past. The TOU includes several ecosystems composed of about 20 different types of vegetation, varying from the coast to the interior. Mammal wildlife in the TOU is typical of low-altitude Guineo-Congolian forests, and 80 species of medium and large mammals are found (elephants, buffalo, gorillas, chimpanzees, panthers, giant pangolins, etc.). The TOU contains 18 primate species and is an important refuge for the lowland gorilla. The Campo-Ma'an National Park and its peripheral zone is the only place in Cameroon where the mandrill and its habitat enjoy protected status. Apart from its ecological importance, this region has great economic, cultural and scientific potential.

THE CAMEROONIAN FOREST MANAGEMENT CONTEXT

The Cameroonian legal and institutional framework demonstrates the government's commitment to biodiversity conservation, as do the signing and/or ratification of many bilateral and multilateral international agreements, ministerial orders and cooperation agreements. Cameroonian forest management is governed by Law 94/01 of 20 January 1994, which contains regulations for forests, wildlife and fishing, and its corresponding Application Decree 95/531/PM of 23 August 1995. Zoning of southern Cameroon is carried out according to the South Cameroon Zoning Plan (Decree 95/678/PM of 18 December 1995). The 1995 document "Organization of production forests in southern

Cameroon: General report" of the Ministry of the Environment and Forests subdivides the production forests proposed in the zoning plan into FMUs. Decision 0108/D/MINEF of 9 February 1998 stipulates the application of norms governing intervention in the country's forests, harvesting methods and environmental protection measures. Order 0222/A/MINEF of 23 May 2001 lays down procedures for the preparation and approval of management plans for production forests on permanent forest land, and monitoring and evaluation of their implementation.

National parks in Cameroon are governed by Decree 95/466/PM of 20 July 1995, which stipulates how wildlife regulations are to be applied. Decree 74/2 of 6 July 1974 specifies that public natural coastal land is part of the State-owned private estate. Green turtles, which are found in the coastal part of the TOU, are protected under Order 1954/A/MINTOUR/DFAP/SC of 16 December 1991.

The Campo-Ma'an TOU is at present subdivided into several sectors: the national park, production forests (FMUs) and a multiple-use or buffer zone, which is set aside for village activities, private property and agro-industrial plantations. The national park and the FMUs are part of the private State-owned permanent forest estate, while the multiple-use zone is part of the non-permanent estate. The term "permanent" here refers to land that is definitively allocated as forest or a wildlife habitat. Each permanent forest must have a management plan. Cameroon has set itself the goal of defining and demarcating 30 percent of the country's total land area as permanent forest estate.

The Campo-Ma'an TOU is a decentralized management structure of the Ministry of the Environment and Forests, which provides technical assistance to the local population and is responsible for management of the forest. It has the task of supervising the creation of the Campo-Ma'an National Park and its management, developing a system for sustainable management of forest and wildlife resources in the buffer zone, developing a management and conservation system for the coastal zone of the TOU, promoting local community participation in management, coordinating the activities of forest and hunting police, and facilitating ecotourism activities.

The Ministry of the Environment and Forests representative in Océan Department acts as the TOU Warden, supported by the ministry representative in Vallée du Ntem Department. The heads of forestry stations act as field-level executive agents. The management committee, comprising the State, logging companies and the local population, examines and approves annual work plans. It is in charge of planning, monitoring and evaluating activities in the TOU. The formation of a local site monitoring committee composed of representatives of all the stakeholders is also anticipated.

The project is financed mainly by the Netherlands Development Organisation (SNV) through the World Bank's Global Environment Facility Biological Diversity Program. The Foundation for Environment and Development in Cameroon will provide funding for certain activities concerned with conservation in the national park. Funds are at present coming from oil companies, for the Campo-Ma'an National Park benefits from compensation from the Chad-Cameroon oil pipeline project.

MANAGEMENT OF THE CAMPO-MA'AN FOREST AND ITS VARIOUS SECTORS

The Campo-Ma'an Management and Biodiversity Conservation Project began in 1996 under the Ministry of the Environment and Forests and with the technical support of two Dutch executing agencies: the Tropenbos International Foundation and SNV. Field activities under the project began in 1997 and the Campo-Ma'an TOU was established in 1999 with the objectives of biodiversity conservation, rational and sustainable natural resource use and a contribution to economic development of the zone. These three objectives are to be achieved while endeavouring to involve all stakeholders in the TOU, particularly the local population and the commercial companies active in the zone (logging companies, agro-industries, etc.). The creation of the TOU allows a better overview of the whole zone so that the different sectors – national park, FMUs and multiple-use zone – can be better coordinated.

The Campo-Ma'an National Park

The national park management and conservation strategy focuses on a number of points, including preparation and implementation of a management plan, establishment of a legal management structure for the national park, strengthening of Ministry of the Environment and Forests structures to allow more effective control, involvement of logging companies and manufacturers in biodiversity management on their concessions bordering on the national park, promotion of ecotourism, establishment of community hunting zones outside the national park, sensitization and education of the inhabitants of the TOU, etc.

Forest management units

FMUs are initially allocated to a company on the basis of a provisional three-year agreement. During this period, the concession-holder must prepare a 30-year management plan. Following approval of the management plan by the forest administration, a renewable 15-year harvesting agreement is made between the concession-holder and the Ministry of the Environment and Forests. Two FMUs are situated wholly within the TOU, while the others are only partially so. An environmental impact study was undertaken in late 2000 and early 2001 as a precondition for harvesting on one of the FMUs. Apart from the production of wood and non-wood products, the FMUs have other types of potential: certification, job creation, tax collection by the State and the collection of fees then paid to the local population, carbon sequestration, etc.

The strategy adopted for management and harvesting of the FMUs is that of establishing a genuine partnership among logging companies, the ministry, the local population and NGOs active in the area. Concession-holders will be strongly encouraged to obtain certification of their FMUs. The ministry must, however, ensure effective supervision and monitoring of logging activities. Local people will be involved in preparing and implementing management plans and will receive forest fees. Other measures to be taken will include the closing of forest tracks when logging is finished, the promotion of animal husbandry, support to development microprojects and the creation of rural forestry committees in the villages around the FMUs.

The multiple-use zone

Sometimes called the agroforestry zone, this area is given over mainly to human activities, such as industrial plantations covering 61 339 ha. The HEVECAM concession (41 339 ha) has introduced protection measures in ecologically fragile zones. The factory is located in the middle of the concession and has a series of sedimentation basins to purify wastewater and collect solid waste. Most of the plantations are more than 20 years old and need to be renewed in order to ensure sufficient production. SOCAPALM (20 000 ha) has a factory producing about 26 000 tonnes of palm oil a year. Its plantations should shortly be renewed in order to maintain a cost-effective level of production. SOCAPALM is interested in supplying technical support to small local planters and buying their produce. The company also has a herd of trypanosome-resistant cattle that help to clean the plantations by grazing them and are also used to transport palm bunches. A number of cattle are slaughtered each year to sell as meat to the workers. The potential benefits of industrial plantations include job creation, animal husbandry under the plantations and the creation of a market near villages. The intervention strategy adopted on these plantations is therefore that of further involving the local people in rubber or palm oil production by promoting small-scale plantations with technical support from manufacturers. It is also necessary to ensure that industrial pollution is kept to a minimum.

The village zone is located along the roads and covers 216 701 ha. A 5-km strip on either side of the main road holds first home gardens behind the houses, then cash crops and lastly a strip of land planted with trees. The slash-and-burn system of cultivation is the most commonly practised. There is little small animal husbandry, while hunting, fishing and the gathering of NWFPs are practised in the forest and in this agroforestry strip. The potential benefits of the village zone include the existence of markets capable of absorbing local agricultural produce and the possibility of harvesting community forests. The development strategy adopted for this zone will be that of fostering a better organization of the local population, developing resource management tools, facilitating the creation of a community forest, improving marketing networks for agricultural produce, promoting the establishment of markets, supporting the setting aside of community hunting zones, reducing illegal hunting and fishing, etc.

Small-scale fishing is carried on by the local population and industrial and semi-industrial fishing by outsiders in the public coastal zone. Tourism is also found in this zone, primarily exploitation of beaches by the villagers and ecotourism focusing on green turtles. Apart from the beaches and green turtles, the main potential of this zone lies in its fishery resources, which are the main source of food and income for the local population. In order to ensure the sustainable development of this zone, a protected coastal strip must be established and all building of infrastructures and housing banned. The strategy adopted will thus be that of preparing and implementing a management plan, creating a coastal reserve for wildlife reproduction and ecotourism development, encouraging local communities to participate in the promotion of ecotourism, etc.

The TOU as a whole
There are a number of potential benefits linked to the proximity of large towns (Douala and Yaounde) with an international airport and to ease of access, both factors favourable to tourist development. The Campo-Ma'an National Park offers opportunities for tourist development and scientific research thanks to its exceptional biological diversity and spectacular tourist spots. The extensive river system could be used for fresh-water fishing and tourism. Fees from logging, paid directly to local communities, could contribute to socio-economic development of the zone. The large agro-industrial companies not only provide employment opportunities, but are also an important market for agricultural food produce and absorb the production of small-scale rubber and oil palm planters. One of the TOU-level intervention strategies is that of strengthening organizations and developing

institutions, while the establishment of local support organizations will be encouraged. Institutional support to local partners must be a primary feature of intervention strategies. The experience of other projects should be drawn on and collaboration encouraged among the main stakeholders. With regard to tourism, development of the zone can stimulate rural development and natural resource conservation. The villages and the Kribi municipal tourist office should therefore receive organizational and institutional support, guides should be trained, the creation of tourism committees should be encouraged, etc.

Hunting is both a subsistence and commercial activity for the local population, so that it exerts heavy pressure. Village zones for controlled hunting should therefore be established outside the national park, while wildlife throughout the TOU should be monitored. It is important that the local people be provided with the necessary tools to participate actively in management of the TOU. Furthermore, it is vital that the people's living conditions be improved. They must draw tangible benefits from participating directly in management of the park and in the various activities taking place in the TOU.

Management of the various zones of the TOU and the effectiveness of the measures adopted will be studied, with the results of such study being used by the management structure, which will be responsible for formulating a research programme. Structural collaboration with the country's Institute of Agricultural Research for Development station at Kribi is anticipated. A satellite research station will be established near the park in order to carry out relevant ecological and forest studies.

ASSESSMENT AND CONCLUSIONS

In terms of the whole TOU, the present situation contains certain constraints. There is a lack of coordination between departmental offices. The lack of sufficient human resources and equipment to manage the TOU is also a problem at the provincial level. The budgets allocated to the TOU are insufficient, while the cumbersome nature of administrative procedures hampers efficient working. Other negative factors are the poor state of the roads and the near total absence of vehicles. The lack of proper organization of the local population also hampers development of the zone. Furthermore, a good many of the people have been accustomed for several generations to taking whatever they need for their survival, especially game, from the natural environment, without giving any thought to resource renewal.

The main constraints for the Campo-Ma'an National Park are the lack of sufficient human and financial resources, industrial activities on the borders of the park, illegal activities, the lack of direct financial returns for the local people and the low level of acceptance of the park by the people. There are also problems at FMU level, the main ones being the low level of ministry staffing so that it is ill equipped to monitor and supervise these areas. The main constraints on industrial plantations are the risk of their extension into an already limited agroforestry zone, the risk of pollution of watercourses and poaching by the workers. There are also constraints in the village zone connected with low soil fertility, the aging of cocoa plantations, relatively unproductive plant material, the low level of organization of the local population, etc. The constraints hampering tourist development of the zone are the lack of coordination among the various parties, the lack of village organizations and the lack of technical skills when such organizations do exist. The communities do not draw any substantial income from this activity. Bureaucratic complications tend to discourage tourists. Reception infrastructures are poorly developed and sites of tourist interest are hard of access and poorly equipped. There is considerable industrial pressure on the coast, especially from petroleum extraction and transport. Green turtles are being caught and their eggs collected in the public coastal zone. Trawlers in the coastal region are reducing fishery resources. Other negative factors are the urbanization of the coastal strip and the risk of pollution from industrial development.

Kilum-Ijim forest, Cameroon

Based on the work of Christian Asanga
Kilum-Ijim project, Cameroon

Management of the Kilum-Ijim forest is an example of the establishment and maintenance of successful partnerships for the conservation and sustainable use of natural resources. The success of community forestry as a biodiversity conservation strategy lies in the convergence of the interests of the local population and the international community in conservation. On such a basis, a partnership can be developed to establish a forest management system in which the goals of all the stakeholders are to a large extent achieved.

C. Asanga. Kilum Ijim forest. Meeting of the council.

DESCRIPTION OF THE KILUM-IJIM FOREST

The Kilum-Ijim forest is a natural closed moist montane forest belonging to the State. It covers about 20 000 ha and is located in the Bui administrative division of Cameroon's Nord-Ouest Province (the Bamenda highlands). Forests in Central Africa have suffered an unprecedented amount of degradation over recent decades and the Kilum-Ijim forest is one of the largest remaining Central African montane forests. Mount Kilum, with an altitude of 3 011 m, and the Ilim ridge are an important centre of endemism and a biodiversity conservation hotspot. There are 11 main types of vegetation in the forest, including *Podocarpus latifolius, Prunus africana* and *Rapanea melanophloeos* at the highest altitudes, *Adenocarpus mannii, Hypericum revolutum* and *Gnidia glauca* forests, montane forests, secondary forests and grasslands regularly burned by herders. The forest contains many endemic wildlife species (especially birds and amphibians) and plant species. Elephants, buffalo, antelopes, etc. can also be seen. The forest plays an important role in controlling water flows and is also of significant cultural and spiritual value to the local people.

THE CAMEROONIAN CONTEXT AND THE VARIOUS STAKEHOLDERS

After Independence, the Cameroonian Government adopted conventional natural resource protection measures by setting up a network of forest reserves and other kinds of protected area. However, the results were not as successful as anticipated. In the past ten years interest has therefore grown in community participation in natural resource management. With the new forest law of 1994, there is now a policy allowing the devolution of management power to local communities. A community forest is a forest covered by a management agreement between the village community and the forest administration, with forest products then belonging to the village community. Many bilateral organizations and international and local NGOs are working at various levels with the government and the local people to promote partnerships for the participatory management of natural resources.

C. Asanga. Kilum Ijim forest. Harvesting bark.

Management of the Kilum-Ijim forest involves three main parties: the traditional authorities (represented by the fons, kwifons and village chiefs), local communities (represented by user groups) and the government (through the Ministry of the Environment and Forests). The traditional authorities have the tasks of coordinating the activities of user groups and settling conflicts. The local population has been using the forest for a long time to produce a wide range of products (fuelwood, medicine, bushmeat, building materials). A fon is the traditional leader of an ethnic group (or fondom) and a kwifon is the fon's council of elders. The Kilum-Ijim forest comprises three fondoms (Nso, Oku and Kom) and is managed by 18 village committees, each in charge of a specific part of the forest. The village committees have close links to the traditional chieftaincies, which hold the customary power. The government also plays similar roles, as well as creating an adequate legislative and technical environment for community forestry. A technical operational unit (TOU) representing the forest administration provides technical assistance to the people and is responsible for managing the central conservation zone, supervising implementation of simple management plans by the communities and periodically reviewing all management agreements. The Cameroon Mountains Conservation Foundation has been established to support conservation activities.

MANAGEMENT OF THE KILUM-IJIM FOREST

Conservation activities in the forest began in 1931 with demarcation of the Mount Oku Forest Reserve. An agreement was concluded between the warden and the local population concerning certain rights of use in the reserve. A study of the mountain chain in western Cameroon by BirdLife International (at that time known as the International Council for Bird Preservation) in the early 1980s led to establishment of the Kilum Mountain Forest Project in 1987, while the Ijim Mountain Forest Project was launched in

1992. The two projects then began to work together and in 1995 were amalgamated into the Kilum-Ijim Forest Project.

Work was carried out with the inhabitants of areas adjacent to the forest to agree on the lines beyond which no felling is permitted. Discussions were thus held between representatives of the traditional authorities and the administration, and the boundaries were fixed in 1994. With the help of the Ministry of the Environment and Forests, the project established community forests throughout almost the entire Kilum-Ijim forest, with a central conservation zone (or plant sanctuary). Between 1995 and 2000 the project concentrated its efforts on the forest management institutions established by local communities, giving support in all the stages of the legal allocation of community forests. Negotiations on the agreed limits of use are an important element and take into account the ministry's conservation objectives and the local population's use objectives. All the simple management plans of the individual community forests incorporate regulations agreed at meetings of the ministry, the traditional authorities and community representatives. The project is now in its final stage, which will last until 2004. It should achieve the creation of community forests throughout the Kilum-Ijim zone and support forest management institutions during their early years. A permanent structure (a TOU) must be established to manage the central conservation area, and also a permanent fund to finance and run the ongoing ecological monitoring programme and other activities. At present, eight forest management institutions out of the total of 18 are in the process of acquiring their community forests through the conclusion of management agreements with the State. This legal process of allocation should be completed in 2003 for all the communities.

There are two important elements in the process of community forest management: establishment of forest management institutions, and support and capacity-building for these institutions so that they can manage the forest for the joint objectives of conservation and sustainable use of forest resources. Four phases have been identified in the process of implementing community forest management and the project has developed working frameworks for each of these phases. The process of community forest allocation is long and complex and the implementation of temporary management measures was necessary in order to ensure that conservation rules and defined boundaries are observed before the people take formal control of the forest. The four phases are as follows:

C. Asanga. Kilum Ijim forest. Participatory rural appraisal (PRA)

- The investigation phase involved 40 villages adjacent to the forest. Participatory rural appraisal techniques were used to gather information on already existing uses and rules of access, and also on the needs and problems of the groups involved.

- The negotiation phase produced a clear definition of conservation and sustainable use objectives in the forest management plan, taking into account the traditional management system and hence the divergences of interest among the various stakeholders. The key steps in the negotiation phase were the creation of legal forest management bodies, agreement on the boundaries of the community forests and on common management rules, consultation meetings, submission of applications to the Ministry of the Environment and Forests, forest inventories and simple management plans. Common initiative groups were formed, composed of one or more communities. Common forest management rules were adopted in 1998 by representatives of the three fondoms. Areas for Fulani herders living within the forest were demarcated. Seventeen of the 18 forest management institutions have already presented their applications. Qualitative forest inventories were undertaken through a community forest survey. Simple management plans are prepared on two levels, the first comprehensive, the second at forest level. The community forest plan comprises two phases: the preparatory phase and the planning phase, with the participation of the communities. The community forest is then divided into sections according to objective, after which a five-year action plan is discussed and formulated, as well as annual operating plans containing details of activities. Those in charge of activities in each section are appointed.
- The simple management plan implementation phase receives support from the project staff, with activities consisting of enrichment through the planting of certain degraded areas, protection and harvesting. The forest management institutions create their own nurseries. Protection includes planting and maintaining trees and forest boundaries, patrolling and preventing illegal activities, penalizing infringements, conducting educational campaigns and removing exotic trees. Harvesting is mostly of fuelwood, NWFPs and building materials.
- The monitoring and evaluation phase entails revision of the management plan at least every five years. No forest management institution has yet reached this stage. Two monitoring procedures have been developed and are at present being introduced. These are an ecological monitoring programme and, for community forest management, an annual report for each of the three fondoms. Simple indicators of the status of the forests were developed for the communities in 1999. An institutional monitoring guide for Kilum-Ijim was produced in 2002, with a book of exercises.

ASSESSMENT AND CONCLUSIONS

The simple management plan for a community forest must be as straightforward as possible, covering essential operations. It must be realistic, with operations that can actually be carried out in practice. The activities should not be expensive for the community and funding arrangements must be defined in advance. The management plan is a flexible working document that can be adjusted. It must be participatory, involving all the members of the community.

The approach followed in this case study has been 100-percent participatory from the time it began in 1994 up to the legal acquisition of the first community forest in 2001. Experience has shown that the participatory process must study the role of users and field staff. The users are actively involved in all the stages of preparation, while field staff must facilitate the preparation process, provide technical advice, organize the plan, and help and supervise implementation of the various operations and the plan itself. The contribution of indigenous knowledge is also very important in community forest management and helps the communities to realize that they are capable of making it work.

The project has facilitated a partnership among communities, traditional authorities and government. The communities are the main managers, while the traditional authorities and the government provide coordination, conflict resolution, and technical and legislative support. This is thus a low-risk approach, in the sense that should one of the partners fail in its function, there is a high probability that the other two will continue the process.

An important lesson to be drawn from this experiment is the effectiveness of on-the-job capacity-building. Although training sessions are provided, the best way of developing capacities lies in planning and carrying out the various activities with the communities and other actors.

The observance of rules is very important for the success of community forest management. Procedures for dealing with and punishing minor infringements have been set up by the forest management institutes, while more serious violations are handled by the traditional authorities and/or the government.

The benefits of forest management act as an incentive for wholehearted participation in forest management. However, the cost of producing and implementing management plans is high in financial, human and material terms. Although the communities do an enormous amount on a voluntary basis, they cannot shoulder the costs of the more technical aspects. Partnerships for permanent funding mechanisms are essential if management is to be sustainable. Furthermore, ministry staff do not in general have the knowledge required to set the process in motion. The most serious constraint, however, is that of conflicts of interest, inasmuch as the interests of those with a short-term view of things are not served by the forest management process (for example, local élites and corrupt officials who look to short-term financial gain). The communities are powerless to deal with such people, who have influence with certain authorities, and an immediate solution to this problem has yet to be found.

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Trinationale Agroforestry Cooperative community forest Cameroon

Based on the work of André Pa'ah
CAFT, Cameroon

This is an interesting example of a multiple-use (primate sanctuary and timber production) community forest with significant biological wealth and village communities involved in participatory management of natural resources through the acquisition of a community forest. The creation of the Trinationale Agroforestry Cooperative (CAFT) shows how these communities have become aware of the opportunities offered by forest management.

A. Pa'ah, OCBB, Cameroon, CAFT, Cameroon. Wood processing

DESCRIPTION OF THE CAFT FOREST

This is an evergreen closed natural moist forest of 17 970 ha belonging to nine village associations in southern Cameroon's Ngoyla District. It possesses a wide specific diversity, with a whole range of tree species (moabi, ayous, tali, sapelli, azobé, sipo, etc.) and an equally abundant herbaceous vegetation. The traditional pharmacopoeia is very much present in the area, based on the use of the various parts of plants (leaves, fruit, bark, roots, etc.). The vegetation has not yet been seriously disrupted, inasmuch as there has been no industrial logging here.

Biological indicators of the presence of large and small mammals are found throughout the Ngoyla zone (elephants, panthers, river hogs, antelopes, various reptiles and birds, etc.). Many large mammals come regularly to certain clearings. Wildlife is potentially threatened in the zone, being the only source of animal protein for the local population. The zone is a corridor allowing the movement of large mammals between the Dja and Nki Wildlife Reserves in Cameroon and the reserves of Minkebe in Gabon and Odzala in the Congo.

THE CAMEROONIAN CONTEXT AND ESTABLISHMENT OF CAFT

The Government of Cameroon has recently revised its environmental and forest management policies with Law 94/01 of 20 January 1994, one of the objectives of which is that of increasing the participation of local inhabitants in forest resource management. Decree 95/531/PM of 23 August 1995 lays down the procedures for implementing the Forest Code. This new Cameroonian forest policy is implemented and supervised by the Ministry of the Environment and Forests and the National Office for Forest Development. However, a number of institutions and organizations (parastatal organizations, international and national NGOs, conservation projects and embassies – for example, WWF, IUCN, UNDP, FAO, SNV, GTZ, the United Kingdom Department for International Development [DFID], the World Bank and the EU) are providing support to the government. The Network of Local NGOs and Associations in Lomié and Dja also plays an important role in establishing direct contact with the people living near the Dja Biosphere Reserve forests.

In 1994, the substitute Deputy for the Ngoyla zone introduced a project to create a community forest for the Baabaa clan. In 1997 and 1998 there were negotiations between the municipal authorities and logging companies regarding extraction of Ngoyla forest resources. In accordance with the zoning plan and forest regulations in force, the zone was set aside for allocation as community forests and not for illegal logging. SNV Cameroon joined forces with the Observatory of Baka and Bantu Cultures (OBBC)[4] to sensitize the communities to the dangers of such logging. Letters from the nine communities requesting assistance were then drawn up as part of applications for the allocation of community forests. OBBC applied to the Netherlands Embassy in Cameroon for funding for the allocation process and to the Project for Sustainable Development Support in the Lomié-Dja Region (SDDL), an SNV eco-development project, for technical assistance. This project facilitated and developed the expertise needed for setting up the first five community forests in Lomié District in 2000.

The nine village communities have thus committed themselves to participatory management of natural forest resources. Following a series of four workshops organized by OBBC, village leaders from these nine communities were unanimous that only the formation of a local cooperative could overcome the various shortcomings in the working of community forest association structures. Thus, in line with Law 90/053 of 19 December 1990 on the freedom of association, they formed development committees, and CAFT was created in the village of Etekessang in 2001. CAFT works both to train community forest managers in implementing simple management plans and to distribute the benefits derived from these forests. It also plays a dominant role in the creation of added value in the production and protection of community forests, in order to ensure social, economic and ecological sustainability in the Ngoyla zone. The forest administration is responsible for approving management documents, supervising local-level preparatory work and implementing the management plan.

MANAGEMENT OF COMMUNITY FORESTS

Management of community forests is aimed at multiple uses (a primate sanctuary and timber production) and management work began in 2001 with a management inventory, a harvest inventory, etc. It is based on a simple management plan, which includes a five-year programme of action, an annual harvesting plan and the planning of community development microprojects.

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[4] A local NGO with headquarters in Ngoyla, OBBC was created by the young people of Ngoyla in 1996. It aims to adapt the economic and sociocultural influences of the zone to environmental management standards with a view to executing community development projects and microprojects.

Implementation of the simple management plan requires various tools (maps, a global positioning system, etc.) and is based on a participatory approach at all levels and the strengthening of the community members' capacity for effective management of forest resources. OBBC and SNV organized a series of theoretical and practical training sessions covering data collection and processing techniques, the reading and use of maps, compasses and global positioning systems, the interpretation and use of the data collected, etc. The legal and regulatory framework requires data to be processed and collated, and this is also needed in order to obtain the approval of the supervisory authority (the Ministry of the Environment and Forests) for future uses of natural resources and redistribution of benefits to community members. The benefits are thus used to improve the people's standard of living.

A survey of the whole area of the community forest was carried out (with a sampling rate of 4 percent) and this management inventory then allowed estimates to be made of the potential of the resources and their distribution on the ground. Two types of silvicultural practice are anticipated: the planting of fruit trees and forest enrichment with moabi and wild mango around the community forests to mark them off, and selective felling to free future stems. Felling will be directional in order to minimize the impact on future stems.

Natural resource use planning covers 25 years under the terms of the management convention concluded between the administration and the communities. Rotations and quantities to be extracted every five years for the length of the management convention are also laid down. In each of the village communities involved, a management leader assumes responsibility for relations with the ministry.

Three sectors have been identified in the CAFT forest: two sectors of primary forest and a fallow or agricultural sector. Their boundaries have been marked and all the stakeholders will ensure internal and external monitoring of extraction and use in these sectors. Infringements committed in these sectors make the community liable to suspension from the community forest and sometimes to permanent disqualification by the ministry. Hunting is also regulated and is permitted solely to community members for their daily food. All community members monitor such activities under the supervision of those in charge of forest operations.

ASSESSMENT AND CONCLUSIONS

The Ngoyla zone is in the ideal position of having both biological wealth and also local inhabitants involved in the participatory management of natural resources through the acquisition of a community forest. The creation of CAFT shows how aware the communities now are of the opportunities offered by forest management.

Implementation of the management plan has not yet been wholly effective and technical assistance is needed for data processing. This will require improvements in data collection and analysis skills, facilitation of access to information and help in introducing modern technologies for natural resource production and local processing in order to create local wealth. Basic communication infrastructures also need to be installed. However, protection of natural resources by the communities is going well.

Eleven other associations are in the process of acquiring community forests (covering about 22 000 ha) and joining CAFT, which will then have 40 000 ha of forest to manage. It has therefore been unanimously decided that certain community members should receive professional training so that they can play an effective role in protection and production activities, harvesting supervision and the local processing of natural resources.

CAFT is still in the early stages of managing human and natural resources and therefore needs support in training its staff so that they can identify the best management and administration strategies. It also needs technical and financial support to set up community hunting grounds or zones of hunting interest under community management, so that the village communities can play a more effective role in monitoring and conserving wildlife in the Ngoyla zone.

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Moangue le Bosquet community forest, Cameroon

Based on the work of Antoinette Pa'ah
OBBC, Cameroon

This is the first Cameroonian community forest in which the Baka Pygmy community has been able to exercise its full rights and be jointly responsible for management.

A. Pa'ah, OCBB. Inventory carried out by the Baka pygmies in the Moangue le Bosquet community forest, Cameroon

DESCRIPTION OF THE MOANGUE LE BOSQUET COMMUNITY FOREST

The Moangue le Bosquet community forest in Cameroon is a natural closed moist forest covering 1 808.5 ha and belonging to the State. It is located in the Haut-Nyong Department in the east of the country, in the Cameroonian-Congolian phytogeographical zone, with a predominance of medium-altitude closed evergreen moist forest of the Congolian type. The Bosquet forest abounds in such harvestable species as sapelli, rikio, kossipo, doussié and ayous. The vegetation is in general closest to that of a transition forest, being composed of elements from both evergreen and deciduous forests. There are also fallow areas near dwellings as a result of agricultural activities. The environment of the Moangue le Bosquet community forest is also favourable to a variety of animal species (primates, duikers, etc.).

THE POLITICAL AND INSTITUTIONAL CONTEXT AND THE VARIOUS STAKEHOLDERS

The concept of community forestry appeared in clear official terms with the promulgation of Law 94/01 of 20 January 1994, containing regulations for forests, wildlife and fishing and providing for both the active participation of the local population in planning forest management and also the sustainable management of natural resources. This innovative forest policy also envisages a fair distribution of the returns from forest activities. A manual containing procedures for the allocation of community forests and management standards was published in April 1998.

This new forestry policy is implemented and supervised by the Ministry of the Environment and Forests and supported by various national bodies (the National Office for Forest Development, etc.) and international organizations (conservation projects, embassies, WWF, IUCN, UNDP, DFID, GTZ, FAO, SNV, the World Bank, the EU). The Network of Local NGOs and Associations in Lomié and Dja provides support to the Cameroonian Government and encompasses OBBC, the International Centre for Support to Sustainable Development, PERAD, the Baka Association, the Action Committee for the Rights of Children and Women, the Regional Programme for the Environment, the Dja Forest Study Centre, CAFT, the Youth Association for Sustainable Development and the East Cameroon Savings Bank. These organizations are helping to devise technical tools for natural resource management and conservation, disseminate legal documents, fund biodiversity conservation programmes, etc. However, although decentralization is becoming a major trend in the whole context of sustainable development in Cameroon, political power is still mainly in the hands of the urban élite and powerful government officials.

On the basis of Law 90/053 of 19 December 1990 on the freedom of association, the people of Moangue le Bosquet village formed an association or village development committee in 1998. The Bosquet Baka Community (COBABO) is thus the owner and manager of the Bosquet community forest. The village has four common initiative groups (CIGs) concerned with agricultural production. COBABO owes its success to the well-developed partnership it maintains less with State structures than with NGOs, projects (the SDDL/SNV Project, the Catholic Mission's Association for the Self-Promotion of the Eastern Province Population Project), a cooperative bank and donors.

The Moangue le Bosquet community forest is thus managed by an indigenous village community, the Baka (the main Pygmy community in Cameroon), for purposes of land security, biodiversity conservation and timber and NWFP production. SNV provides technical support by organizing village communities and supervising the formulation, monitoring and evaluation of the management plan. The forest administration is responsible for approving management documents and for field-level supervision of preparatory work.

MANAGEMENT OF THE MOANGUE LE BOSQUET COMMUNITY FOREST

The Moangue le Bosquet forest is the first community forest in Cameroon in which the Baka community can exercise its full rights and also be responsible to the administration for its management with no intermediary. For COBABO, this forest is an instrument for the sustainable management of forest resources and an effective way of reducing the endemic poverty of the Pygmy inhabitants of this rural zone. Until 1998 the Baka people of Bosquet were overlooked by laws on associations. They were also being deprived of their fair share in forest fees paid by a logging company that was cheating them and selling off the trees from their forest. The Pygmy population of Moangue le Bosquet thus came to see community forestry as a way of protecting and conserving their forest resources, and also of harvesting them for themselves.

Following awareness-raising activities by the International Centre for Support to Sustainable Development and the SDDL/SNV Project, the Pygmy population expressed a desire to form a CIG. The SNV project had the aim of supporting vulnerable communities through eco-developmental activities in the Lomié region, especially in the village of Bosquet, 98 percent of whose inhabitants are Pygmies. The support provided by this project to COBABO began by helping it prepare an application for a community forest in 1998, after which it helped it formulate a simple management plan in 1999. The community forest management convention between COBABO and the government was signed in 2000. Since 2001, assistance in implementation of the simple management plan has taken the form of practical training sessions on State-supervised harvesting of timber and its marketing. Collaboration mechanisms were established between the International Centre for Support to Sustainable Development and the Association for the Self-Promotion of the Eastern Province Population, which strongly supported the idea of organizing the Baka into working groups. Four CIGs concerned with agricultural production have been formed in Bosquet.

The simple management plan for the Bosquet community forest was produced with the keen participation of the communities in every stage of the process. It includes a five-year action programme and an annual harvesting plan based on the practices of the rights-holders and beneficiaries of forest resources.

COBABO adopted a method based on the participatory approach. A series of training sessions and workshops was thus organized and run by the SDDL/SNV Project and other COBABO partners. This training covered map-making, socio-economic data collection and analysis techniques, forest navigation techniques, multiresource inventory techniques and data interpretation.

Management tasks (making management and harvest inventories) began in 2000. The community divided its forest into three sectors:

- primary forest in the north, to be used for small-scale timber harvesting;
- the inhabited and agricultural zone, to be used for housing, agriculture and NWFP collection;
- primary forest in the south, to be used for small-scale timber harvesting.

The community forest was surveyed using a multiresource sampling (at 2 percent) to determine the potential of forest resources and their distribution on the ground, and a systematic 100-percent sampling survey so that the community could effectively plan the harvesting of timber resources and thus establish the market value of its forest.

Timber is harvested by the villagers using a mobile saw. This type of logging requires no heavy machinery and therefore does little damage. The community will use directional felling and State-supervised harvesting

A. Pa'ah, OCBB. . Inventory carried out by the Baka pygmies in the Moangue le Bosquet community forest, Cameroon.

techniques. The wood is basically sawn into planks and slats. The volumes of harvestable and marketable timber have been determined. The simple management plan anticipates a silviculture based on natural regeneration, although the community will plant wild fruit trees to improve the production potential of the forest.

The Baka community decided that only the inhabitants of the village should continue to exercise rights of entry and use in the forest. New plantations can be opened up only after consultations among farmers, the COBABO office and the village head. Hunting, fishing, gathering and NWFP collection require prior authorization from the community. The opening up of new plantations and hunting are banned in the two primary forest sectors. A plan for wildlife and NWFP harvesting is included in the simple management plan.

Income from forest harvesting is helping to improve the local population's standard of living by allowing collective investments.

ASSESSMENT AND CONCLUSIONS

Cameroon's new forest law has revolutionized attitudes to the management of forest areas by encouraging the participation of vulnerable communities in the harvesting and conservation of the natural resources alongside which they live and for which they are responsible.

All the management activities of the Moangue le Bosquet community forest have enjoyed great success thanks to a wide range of technical, material and financial support from the SDDL/SNV Project. The project has also fostered the growth of a broad partnership throughout the region. Awareness and training campaigns with a view to greater security and more effective harvesting have increased the mastery of techniques for managing forest resources. The Baka community has started on a mobile training programme in State-supervised harvesting. The people's knowledge of the forest and their grasp of various ways of improving rights of use and control of the forest resources of their land have increased.

The people of Bosquet are wholeheartedly committed to carrying out the various management tasks for their forest, although the complex mentality of the Baka and their low educational level have sometimes made information collection and research difficult. However, their participation in training sessions on community forest topics has led to some useful solutions to this community's lack of information and research.

Nevertheless, there is still a considerable lack of understanding about implementation and respect for the simple management plan with regard to the harvesting of timber products and the implementation of village community development projects. This lack is compounded by the suspension of some types of harvesting of wood products. In addition, returns from the sale of wood are being poorly managed, with only one family appearing to profit. The community microprojects anticipated in the simple management plan have not yet got under way. Small-scale hunting and NWFP harvesting practices have not yet changed very much.

If current practices are to be improved and the whole Baka community is to benefit from forest income and products, the following areas require attention:

- an improvement is needed in the technical capacities of the community's leaders with regard to forest resource harvesting;
- an increase is needed in the level of information and communication regarding changes in harvesting activities and marketing of the resulting timber;
- the financial management techniques of those in charge of management within the community need to be developed;
- help is needed in setting up an effective internal decision-making framework for supervision of resource and income management, so as to ensure transparency.
- the community should be alerted to the dangers it runs if it fails to adhere strictly to the terms of its simple management plan, for the government can suspend forest harvesting at any time if the rules for harvesting and the redistribution of forest income and benefits are violated;
- the government, projects and NGOs must boost training and the exchange of experience regarding community forestry and the planning of extraction and investments in order to ensure ecological, social and economic sustainability.

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Mogroum forest pilot series, Chad

Based on the work of Hamid Taga
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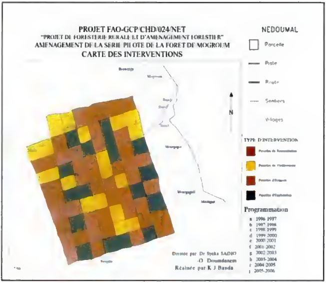
This experiment in participatory forest management concerns the organization of local inhabitants in structures – forest management groups – capable of managing this forest. The participatory approach has been recognized as the critical factor in the success of this management effort, whose main objective is the production of fuelwood and charcoal.



DESCRIPTION OF THE MOGROUM FOREST

The Mogroum forest, covering 40 000 ha, is a publicly owned natural transitional (closed/open dry) forest. It lies in Chad's Mogroum Canton, 130 km from N'Djamena, in a transitional zone between the Sahelian and Sudanian zones, which lends the vegetation a very special character in terms of both productivity and plant composition. Lying between two bioclimatic regions, it contains a wide range of species, with about 50 timber species and 30 herbaceous species. The vegetation comprises savannah woodland, which may be closed or open, with tree and bush savannah in several places.

Drought and poaching have contributed greatly to the decline of wildlife in the Mogroum forest, which was formerly very rich. Many species have disappeared, as a result either of predation or of their migration to more favourable environments. Wildlife today appears to be residual and is limited to some Dorcas gazelles, but especially to rodents and green monkeys. The only game birds that are found in any abundance are ducks in the rainy season.

THE CHADIAN CONTEXT AND THE VARIOUS STAKEHOLDERS

Regional awareness was awakened by the exceptional droughts of 1968–1973 and 1983–1984 that ravaged the Sahel. Desertification of the most vulnerable zones caused a massive migration of people to areas relatively more favourable to production. Faced with this twofold challenge (desertification and population movement), the Sahelian states forming the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) held a regional seminar in Nouakchott (29 October–14 November 1984), at which they adopted a strategy aimed at conserving their land and ecological heritage, reviving productive potential and satisfying the population's basic needs. With assistance from CILSS and the United Nations Sudano-Sahelian Office, Chad then prepared a Master Plan to Combat Desertification, which was adopted in 1989. This environment-development approach with the participation of the local people was pursued at a number of meetings and seminars in the country, leading in 1991 to the establishment of an environment-development technical support unit, which worked until 1994 when it produced a proposal for a series of programmes and an action plan for the period 1994–2000. Delays caused by political and military unrest led the Government of Chad to apply to the Netherlands, UNDP and FAO for funding for various projects, including that of management of the Mogroum forest.

Law 36/PR/94 of 3 December 1994, on the organization of the marketing and transport of wood to urban centres and the taxes to be levied, stipulates that State-owned forests may be ceded to a rural or village community for its benefit. The new law setting out regulations on forests, wildlife and fishing, at present on its way through parliament, defines the national forest estate and stipulates how it is to be harvested and protected. Management plans are prepared in consultation with the institutions and inhabitants affected and are approved by a decree from the minister responsible for forests.

In an effort to stop the damage to resources caused by the local population (from fires, overgrazing, etc.), a pilot management scheme was implemented in part of the forest (7 800 ha) with a view to involving the inhabitants, making them aware of their responsibilities and applying a set of techniques to achieve sustainable resource management. The Mogroum forest is officially part of the State-owned private estate, although the customary rights of the local population are recognized. Each of the three villages using the forest has its own area, which it harvests by virtue of traditional rights of use, under the authority of the head of the village or area. The Mogroum forest is set under the responsibility of the forest administration, whereas the pilot scheme is under that of the traditional head of the Mogroum Canton and under the direct charge of the village heads, who receive help from the forest department.

RURAL FORESTRY AND FOREST MANAGEMENT FOR FUELWOOD PRODUCTION

Through FAO, Dutch technical cooperation financed the Rural Forestry and Forest Management for Fuelwood Production Project between 1989 and 1992, with the objectives of promoting rural forestry, preparing natural forest management plans and promoting improved stoves. The preparatory work for management of the Mogroum pilot series started in 1990 under this project, which gathered information on the political, institutional, socio-economic and ecological environment of the forest. A preliminary forest inventory carried out in June 1990 revealed an insufficient potential to supply fuelwood to N'Djamena. The area was thus expanded from 4 000 to 8 000 ha. The Chadian Government then applied to FAO for help in financing and implementing the Support to the Development of Rural Forestry Project for six months in 1993. UNDP financed the Preparatory Assistance for Management of Natural Forests around N'Djamena Project, also carried out by FAO, between 1993 and July 1994. The activities of these two projects focused mainly on organizing the local population into forest management groups and carrying out some harvesting work. These three projects made up the first phase of the Rural Forestry and Forest Management for Fuelwood Production Project – Phase 2, which aimed at carrying out a priority action plan for environmental protection and desertification control, on the basis of participatory, rational and sustainable management of Chad's forest potential. The immediate objective was thus to consolidate and implement the first participatory management plan for the Mogroum forest, which was prepared in 1992.

The forest became the object of participatory management by the local people on a pilot series covering 7 800 ha. In view of imprecision in some basic data and the low involvement of the beneficiaries, the project had to return to some preliminary tasks (demarcation of the forest, village lands, felling plots, etc.) and also organize the people. The management plan and the harvesting plan for the Mogroum pilot series are based on such field work as the first-degree systematic inventory (with a 2.7 percent sampling rate) of timber resources. The pilot series was divided into systematically inventoried square sample plots. The total volumes of standing wood and wood that could be marketed as fuelwood were determined, and the plots were classified into regeneration, aging and thinning groups.

Exploitation of the forage potential was also seen as an essential element in management from the very start. With a view to making up the forage shortfall in the dry season, the management plan thus envisages the development of grass ensilage and storage techniques.

The methodological tool used was semi-structured interviews with groups, individuals and resource people in order to ensure the effective participation of all the parties concerned. A historical overview was also used to determine significant steps for the life of the village and its inhabitants. The calendar of activities provided information on the timetable of production systems, work times, workers, etc. Venn diagrams were used to explore organizational problems, relations between the village and the outside world, etc. Analysis of problems and the search for solutions are the most important stage and are a precondition for negotiating a contract binding on the various parties (population, administration, project).

A series of awareness and animation campaigns was conducted in order to explain the benefits of forest management. The various meetings were used to explain that management would make no difference to village ownership of the land and that natural resource management would directly benefit the inhabitants concerned, organized into village forest management groups. Socio-economic surveys and studies were conducted following these campaigns, leading to the formation of 18 forest management groups (four of them composed solely of women) between 1992 and 1996. Only 13 of these groups are directly involved in management of the pilot series, under the title of "forest management committee". The women's groups are confined to producing seedlings, carrying out community planting and collecting dead wood, seeds and fruit. The management plan was prepared according to the clauses in the terms and conditions defining the rights and responsibilities of each party regarding the forest. It was drawn up for a ten-year period beginning in 1996 so as to allow study of the reactions of the various species to felling and the effects of silvicultural techniques on regeneration.

The villagers agreed that each village should keep the recognized boundaries of its land, but that the planned silvicultural activities concerning both harvesting and regeneration or enrichment would be carried out by all the members of the village groups, ignoring such boundaries. The Mogroum forest was then subdivided into three village areas known as "management blocks" or "units" of varying sizes. Each block is subdivided into plots, known as "working units", making a total of 79 plots. These plots are divided into groups according to their different silvicultural practices: a regeneration group enriched by sod seeding or planting, an aging group closed off in rotation for two to four years throughout the management period, a thinning group and a harvesting group meeting harvestability criteria.

Harvesting rules were established. Seed-trees and isolated trees will be excluded from harvesting to ensure stand regeneration. Tracks will be made in the form of felling strips and firebreaks. A 20-year cycle will be followed, given the lack of knowledge of such parameters as volume, drought cycles and productivity. The wood will be cut by woodcutters who are members of the groups, or the groups will negotiate sales to loggers from N'Djamena. The harvesting plan proposed by the project gives details of anticipated annual production, the areas to be harvested, enriched and protected, anticipated returns and expenses, and the responsibilities of each party.

Income from the sale of wood and charcoal will be shared among the woodcutters (40 percent), a working capital fund (16 percent), the creation of a management fund reinvested in the forest to finance rehabilitation work (34 percent) and forestry tax (10 percent).

The activities assigned to the village groups are those of harvesting and marketing forest products, enrichment, rehabilitation and protection against brush fires and the wandering of animals into closed-off plots. The groups must also take part in rehabilitation of their village environment, especially by planting trees in and around settlements. Through the working capital fund, they will help to finance joint socio-economic activities in their villages. Complementary activities should be undertaken as part of the overall management of village lands with a view to sustainable development (wells, orchards, crops, improved stoves, craft work, etc.). Although biodiversity protection is not mentioned in the management plan, such measures as brush fire prevention, the closing off of certain areas, a ban on the felling of sacred trees are nevertheless anticipated.

It is also anticipated that the forest service will periodically monitor and evaluate implementation of the management plan, punishing anyone who infringes the terms of the plan and settling any dispute between group members, between one group and another and between groups and third parties.

ASSESSMENT AND CONCLUSIONS

No monitoring has been carried out since FAO's technical assistance came to an end. The forest management groups that were set up have not become operational and the management plan has not been implemented. Revenue received has been held for more than two years before being shared out among members according to the distribution system. Harvesting is not being carried out according to prescriptions. The problem is that the forest management groups and inventory and management unit were instituted just before FAO's technical assistance came to an end, so that they did not gain enough experience in forest management. Activities carried out as preliminaries to management gave rise to a certain resistance to change and anxiety among the population that they might be dispossessed of their land. Moreover, there is still no programme for research and the dissemination of information in Chad.

However, the concept of village land introduced by the project has been adopted by the inhabitants and has enabled them to integrate all their activities with regard to agriculture, animal husbandry, forestry, etc. into a single system. Each area of village land is guarded by its people, so that access to forest resources within it is denied to any outsider – which was not previously the case. Brush fires also no longer occur. With no monitoring in place, villagers have adopted a kind of selective harvesting in which only large trees on several plots are felled, thereby achieving prudent harvesting. Plant formations have thus as a whole remained intact. The renewal of technical assistance is, however, urgently needed, for it would prevent the loss of experience that was gained at the cost of several years' hard work and also enable the people to build on this experience.

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BRIEF DESCRIPTIONS OF OTHER NOMINATED FORESTS

TIMBER PRODUCTION

So'o Lala Forest Reserve, Cameroon

This forest reserve, covering an area of 39 728 ha, is located in the Akonolinga District of Cameroon's Centre and Sud Provinces. It is a medium-altitude semi-deciduous closed forest, containing an abundance of Sterculiaceae.

The National Office for Forest Development is the government department responsible for managing the reserve. The management objectives assigned are those of timber production and improvement in the local population's standard of living. Management was established in 1993 with the support of ITTO as a pilot scheme to identify a management model for Cameroon. The partners are the forest administration, the local government, a private operator with a subcontract for timber harvesting, and the local inhabitants. The local government helps in surveillance of the reserve and also provides training for the local population. Two types of committee were set up to implement the project: a steering committee (with decision-making authority for the project) and an advisory committee (with responsibility for monitoring the concerns of the local population). All the stakeholders are represented on these committees.

The management inventory has been completed and the management plan has been prepared with the following key elements:

- a 25-year rotation;
- an annual harvest potential of 1 600 ha in terms of area and 50 000 m^3 in terms of volume;
- establishment of a zoning plan for the reserve and implementation of a land use plan (production, silviculture and agroforestry series).

The conservation measures adopted are based on the controlled exercise of rights of use, development of a stabilizing agroforestry system supported by the extension of intensive silvicultural methods, and the promotion of creeper removal as a pre-harvest silvicultural activity to reduce damage from logging. Harvesting is also planned and monitored, forest tracks laid out, and minimum harvest diameters established. Agroforestry areas have been demarcated on the ground. With regard to silviculture, post-harvest rehabilitation programmes for degraded zones are planned, and also the enrichment of natural stands.

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Ndote forest, Equatorial Guinea

This is a State-owned natural closed moist forest with an area of roughly 55 000 ha, located on the coast in Equatorial Guinea's continental region. It is being harvested by a private company (the Forestry Company of Equatorial Guinea, or SOFOGE), which has long experience in the country. The forest administration is responsible for monitoring and making sure that the provisions contained in the management plan are respected.

The management process was started in 1998 and has the main objectives of sustainable timber production, diversification into new species and conservation of exceptional coastal ecosystems. The management plan is thus based on the definition of three forestry series corresponding to the assigned objectives:

- a concerted management series, which can be described as community-based and multipurpose (habitat, agriculture, land reserve and wood products);
- a conservation series;
- a production series.

The silvicultural approach proposed is that of natural regeneration of okoumé stands. Relations between the logging company and the local population are at present good, and forest harvesting is contributing to economic and social development of the area.

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PLANTED FORESTS AND AGROFORESTS

Eucalyptus du Congo, Republic of the Congo

M. Marzot, FAO, Flowering Eucalyptus, Congo.

These cloned eucalyptus plantations, covering 42 000 ha and belonging to the Eucalyptus du Congo company (ECO s.a.), are located in the coastal Kouilou Region on what was sandy savannah land considered unsuitable for agriculture.

The presence of a deep-water port not far from the stand (at Pointe-Noire) is a major advantage for export operations (the most distant plantations are 60 km away). The plantations are managed to produce paper pulp and electricity and telephone poles. The beneficiaries are the company's shareholders and also the population of Ponte-Noire and the surrounding area whom it supplies with fuelwood and wood for charcoal. The inhabitants of neighbouring villages are also involved in plantation protection through the tenant farming system. Thus they help in surveillance of the plantations, receiving payment for this from the company.

Management of the plantations started in 1978. Eucalyptus forests were established after a lengthy outlook study. They receive ongoing upstream support from a research unit (the Research Unit on the Productivity of Industrial Plantations). Research-and-development is dynamic and internationally respected, encompassing genetics, silviculture, sustainability and technology. Fertilization is intensive.

These plantations use plant material that can be improved and renewed through the ongoing creation of increasingly productive clones. This is now allowing the conversion of old and relatively unproductive clones (12 m^3/ha/yr) with the new Uro-grandis clone (25-30 m^3/ha/yr). Since November 2001, 500 ha have been replanted per month.

Methods for the vegetative multiplication of clones have been mastered, as has regeneration through coppicing or replanting methods. Surveillance measures to guard against fire and illegal cutting have been put in place, while those against erosion are now being established (roads and tracks on contour lines).

The annual production of woodpulp is between 300 000 and 500 000 m^3. These forests also meet almost 80 percent of the domestic energy requirements of the population of Pointe-Noire, thus helping to reduce unauthorized extraction from the islands of natural forest in the zone. Subcontracting has been professionalized with 800 to 3 000 workers, and this has helped to improve access to villages and develop the road infrastructure. The use of eucalyptus wood to build houses and make furniture (started, but then abandoned) should be taken up again. In the case of houses, for example, it can be used as an alternative to particleboard, which is obtained from ilomba wood (*Pycnanthus angolensis Exell*).

These plantations are a good example of the application of research into silviculture on plantations in degraded zones. They use silvicultural practices for the rehabilitation of degraded zones with forest plantations (established on what was savannah land previously considered unsuitable for agriculture). The Congo has been and still is a leader in cloned eucalyptus plantations and the genetic improvement of eucalyptus.

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Kilibula plantation, Democratic Republic of the Congo

This 22-ha agroforestry plantation, located at Uvira in Sud-Kivu Province, belongs to the NGO Action Center for Integrated and Sustainable Development in the Community and the local population. It is managed by the NGO and a village management committee. The beneficiaries are the disadvantaged local people, who also participate in its management and in decision-making.

Management started in 1995 with the objectives of soil and watershed protection and the production of fruit and fuelwood through agroforestry. Management involves the local population in both management and decision-making. And the advantages and benefits generated by the plantation are passed on to the population concerned, which is also constantly made aware of the usefulness of trees and the need to protect them.

A nursery for forest and agroforestry seedlings has been set up (producing 10 000 seedlings per season). A permit from the management committee, made up of ten people elected from among the various stakeholders, is required for cutting or mutilating trees, picking fruit and harvesting other products. Trees are cut according to a plan, with a view to conservation. A meeting is held each month at which the committee members report on their management to the population concerned, and this provides a framework conducive to the exchange of ideas and the people's participation.

This initiative has also improved the socio-economic conditions and well-being of local society, representing one of the main sources of cash for the 400 beneficiary households. It is a vital element in the development of their economy in this period of war in the Democratic Republic of the Congo, when some parts of the forest are inaccessible because of the intense fighting taking place there and the anti-personnel mines that have been laid, thus depriving the population of its traditional landholdings. Hence the need to maintain the sustainability of these products for future generations.

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Ruhande Arboretum, Rwanda

This 200-ha forest planted in 1933 is located on Ruhande hill in Rwanda's Butare Province at an altitude of about 1 700 m and belongs to the Institute of Agricultural Sciences of Rwanda, a public structure. The plantation is made up of 148 deciduous species and 56 conifers, encompassing a mixture of exotic and indigenous species. A number of primates are found in the forest.

The Institute of Agricultural Sciences is responsible for managing the arboretum for research purposes and for the selection of more productive forest and agroforestry species suited to local conditions prior to their extension, as well as for biodiversity conservation. The ministry responsible for forests and/or the environment is involved in decision-making regarding management.

Management was established in 1993. The plantation is made up of deciduous and conifer species of various origins. The exotic species are suited to local conditions and meet the local population's fuelwood needs. The indigenous species of the natural forest are conserved and their behaviour monitored. The arboretum is thus a tool in forest research and helps in the production of seed and seedlings of scientific value. Timber species are harvested for the urban population.

The working plan is respected and covers the whole area of the arboretum. Most of the plots are managed for trial or observation purposes, with study subjects varying from plot to plot (agroforestry, indigenous species, etc.). There is also a protected bushland that is self-regenerating.

The silvicultural approach adopted consists of thinning, lopping, coppicing, etc. Harvesting covers seed, fuelwood and sometimes timber. The local population respects the upkeep of the plots and permanent tracks, which are not threatened by wandering domestic animals. The arboretum provides jobs for ten villages in the area, as well as wood (kindling) for cooking purposes.

The arboretum is of national, regional and international importance, for it acts as a granary for forest and agroforestry seed. Several seed stands have been established within it, and the seed is used by a number of countries, especially in Africa. All the forest nurseries in Rwanda and the various current development projects obtain their seed from the Ruhande Seed Station today.

Students and teachers at the National University of Rwanda (particularly the Faculties of Agricultural Science and Science and Technology) appreciate the arboretum for teaching and research purposes, as do members of a number of foreign universities and research institutions.

The Ruhande Arboretum is an example of the possible application of research on forest management and *ex situ* biodiversity conservation practices.

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PROTECTED AREAS

Patte d'Oie Forest Reserve, Republic of the Congo

The Patte d'Oie Forest Reserve, created in 1938, is the only remaining pocket of natural forest in Brazzaville. This mixed forest, encompassing blocks of natural mesophile forest and plantations, lies in the heart of the Congolese capital, covering a still appreciable area of 125 ha (as against 214 ha when it was created in 1938). It belongs to the Congolese State.

The Brazzaville Regional Directorate of Forest Economy, which is in charge of management of State forests in the Brazzaville Region, is responsible for managing the Patte d'Oie Forest Reserve. The main objectives of the reserve are biodiversity conservation, game-viewing tourism and recreation. Since 1985 (the date of the first National Tree Day in the Congo) the national or local commissions for National Tree Day have become real consultation and decision-making frameworks for management programmes, plans, etc. The inhabitants of Brazzaville are themselves involved in managing this reserve and are among the main beneficiaries.

The working plan for the reserve has two components:

- policing: a patrol team, halting of unauthorized subdivision, expulsion of illegal purchasers, etc.;
- technical operations: development of a zoning system and establishment of a land use plan for the reserve.

Rehabilitation programmes are implemented for degraded zones, together with monitoring and evaluation. Various silvicultural approaches are used on different blocks: full reforestation in bare zones, enrichment of natural forest by introducing indigenous species (limba, okoumé, sapelli, sipo, etc.) and fire prevention efforts. A regional nursery for forest and fruit tree seedlings has been set up. In Brazzaville, 12 of the 15 National Tree Days so far organized have been devoted to safeguarding the Patte d'Oie Reserve.

Scientific studies are being carried out, notably monitoring of the dynamics of trees in the natural forest cover. No harvesting of wood or NWFPs is permitted, except for products of crops grown under an agroforestry system.

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COMMUNITY FORESTS

CODEVIR community forest, Cameroon

The community forest managed by the United Villages Development Committee (CODEVIR) covers 4 100 ha in eastern Cameroon, in the "agricultural and residential" zone of the non-permanent State-owned estate (Lomié District, Nzimé-Nord Canton). It is a natural closed moist forest.

Unauthorized felling of their forest heritage by a logging company led the inhabitants of four villages to form the CODEVIR association with a view to pursuing a community forest adoption process. The objectives assigned to this forest are the harvesting of wood and non-wood products, agrosilvipastoral use, hunting and other traditional uses.

The simple management plan was established in April 2001 and approved with a letter from the Ministry of the Environment and Forests on 6 May 2002. It was prepared by the communities with the support of basic training in forest techniques, the NGO International Centre for Support to Sustainable Development and the SDDL/SNV Project. Funding is raised by the communities from members' subscriptions and forest fees from the four villages of Djénou (the headquarters), Djébé, Abakoum and Nemeyong, made up of two ethnic groups (the Baka and the Nzime). The inhabitants of the four villages and the local forest administration are involved in technical supervision and surveillance. A contribution is expected shortly from national and outside economic operators within a partnership framework.

The key elements of the simple management plan are as follows:

- division of the forest into four intervention sectors: one agricultural and residential sector (1 000 ha) and three primary forest sectors (1 200, 800 and 1 100 ha); the five-year simple management plan can be renewed for 25 years under current law; apart from the five-year action programme, an annual harvesting plan has been established for the four sectors;
- section 4 in the west is periodically closed off to hunting and wood cutting to allow for regeneration and the reconstitution of wildlife species, and for reasons of proximity to the Dja reserve; each sector is divided into five 200-ha plots, with each plot corresponding to an annual output of 500 m^3; the topography of the forest imposes prudence with regard to the natural boundaries in the west and those of forest management zones in the east; with this in mind, enlargement of the forest by up to 5 000 ha can be requested;
- there is a major possibility for the development of NWFP harvesting, according to a feasibility study (basket-making, moabi oil extraction, etc.).

Conservation measures are as follows:

- disciplinary measures reinforced in the statutes and interior rules of the association in order to counter infringements of rights of use;

- extension of agroforestry, with alternating products;
- protection of certain trees such as moabi and wild mango;
- environmental awareness-raising;
- monitoring of the natural regeneration of wild stock;
- respect for minimum harvest diameters;
- respect for the regulations in force;
- a ban on the opening of new fields in primary forest zones;
- harvesting based on portable sawing operations, without opening up tracks in the forest or bringing in heavy machinery;
- prevention of resource wastage;
- re-establishment of community forest boundaries.

The CODEVIR community forest in Cameroon is a good example of the exercise of ownership and control of resources by the local population, together with the definition of joint rules and methods for resource harvesting. If extraction of the resource is low, the impact is low. This project is still in a pilot phase and is just getting under way, so that medium- and long-term community objectives still need definition.

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Ngola and Achip community forest, Cameroon

This forest has an area of 4 200 ha and stretches for 17 km in Cameroon's Lomié District. It is a medium-altitude closed moist forest that has never been industrially harvested until now. This community forest belonging to the communities of Ngola and Achip villages is managed by a village development committee, the Balagbo, Pa'a, Bamouh Bankoho, Baka and Bodja Family Association. The stakeholders are the forest administration, local NGOs, young loggers, the Fets Federation and the people of the villages. It is estimated that there are 1 430 beneficiaries of forest management. The management objectives assigned to this community forest are the small-scale production and processing of timber, the production of NWFPs, implementation of joint microprojects, and ecotourism.

The first steps in preparing a simple management plan were taken in November 1998 with the technical support of the SDDL/SNV Project as a pilot experiment to develop a management model for community forests in Cameroon. The plan lists the activities to be carried out in the forest during the first five years of self-management.

An inventory of timber resources and various socio-economic surveys were carried out. Zoning of the community forest was established, with its division into three sectors (two primary forest sectors and one residential and agricultural sector). Demarcation of the zone was carried out. Rotation length was fixed at 24 years and annual potential in terms of area at 175 ha and in terms of volume at 1 000 m^3 of lumber.

The simple management plan was approved, the management agreement signed, and the 2001–2002 annual report and 2001–2002 annual harvesting plan approved. Notification of the start of operations was signed, and harvesting and marketing activities carried out despite many difficulties with regard to the manner of harvesting. Activity reports have been produced, but the definitive management plan is still in course of preparation in close collaboration with the Dja Forest Studies Centre, specializing in forestry operations, and the Fets Federation through its strategic plan to install a mobile processing unit for the output of community forests in the Lomié and Dja region.

The conservation measures adopted are based on the twofold principle of continuing activities carried out exclusively by members of the community, particularly the supervised exercise of rights of use, the development of a community palm plantation, creeper removal and harvesting by the community itself in order to reduce the extensive damage caused by logging companies. A monitoring committee will also be set up for surveillance of the forest. A programme for the regeneration of degraded zones is at present under way, encompassing notably the carrying out of multiresource inventories and the identification of seed-trees.

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Nzienga-Mileme community forest, Cameroon

This State-owned natural closed moist forest covers 4 490 ha and has the status of a community forest. It is located in Lomié in eastern Cameroon and can be divided into three major sectors:

- a forest zone in the north with an area of 2 666 ha, made up of primary forest containing species providing timber (sapelli, iroko, etc.) and poles (moabi, wild mango, etc.); its main use is timber harvesting, with collecting, gathering, subsistence hunting and fishing as secondary uses;
- a residential and agropastoral zone of 340 ha that includes young secondary forest containing species providing timber (sapelli, iroko, etc.) and poles (moabi, wild mango, creepers, etc.); it is used mainly for slash-and-burn cultivation, fish farming, animal husbandry and small-scale timber harvesting; secondary uses are subsistence hunting, agriculture, animal husbandry, fishing and gathering;
- a forest zone of 1 484 ha in the south, composed of primary forest containing species providing timber (sapelli, iroko, etc.) and poles (moabi, wild mango, etc.); its main use is timber harvesting, with collecting, gathering, subsistence hunting and fishing as secondary uses; a five-year action programme has been formulated for this sector.

The management objectives are an improvement in the living conditions of the local population and sustainable use of the forest. The forest is managed by the local NGO Environmental Protection, Research and Support to Development. A commercial company carries out actual logging, under the supervision of the NGO and a local monitoring committee. The forest station head, representing the government, helps the officer in charge of forest operations to draw up his reports and fill in vehicle permits allowing the circulation of the timber extracted. The workers are villagers employed by the logging company and skilled machine operators (using Lucas mills).

Management was started in 1999, with the following key elements:

- a management and harvest inventory was carried out and the results made available; a wildlife inventory was also carried out;
- the simple management plan was prepared;
- the division into felling plots was made and the rotation plan issued;
- the conditions of the contract between the logging company and the local population are strictly respected, under penalty of a harvesting ban.

Between three and five trees per hectare are extracted and harvesting requires neither heavy machinery nor the opening up of tracks. Conservation measures focus on the identification and protection of seed-trees and a ban on hunting large primates. A monitoring committee has been set up to monitor timber harvesting and subsistence hunting. An agroforestry system will be established in areas allocated for plantations. In socio-economic terms, income from forest harvesting helps to improve the living conditions of the inhabitants of the two villages concerned by harvesting of the community forest.

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Meme River Forest Reserve, Cameroon

This deciduous closed tropical moist forest covers more than 1 450 ha and is located in Cameroon's Mbonge Subdivision. The wide (40 m) Meme river flows through it. The area involved was recently increased to 20 000 ha, thus involving the Meme et Ndian Division. It falls under the supervision of the Federation of Environmental and Ecological Diversity for Agricultural Revampment and Human Rights. It belongs to the Bakundu and Mbonge peoples, who are also the beneficiaries, and more than 25 000 people and 20 villages are affected by the management.

Management of this forest reserve was started in 1991, with the multiple objectives of community use and soil and watershed protection.

M. Tcharbuahbokengo, FEEDAR&HR, Cameroon. Timber extraction in the Meme River Forest Reserve, Cameroon.

The key elements in this management approach are as follows:

- sustainable harvesting of forest and water resources ensured by a legal procedure drawn up by the Ministry of the Environment and Forests;
- harvesting monitored by forest rangers;
- selective extraction of trees;
- adoption of a "selection forest" type of silviculture;
- management carried out by the local population, which also draws the benefits.

The result is that the forest is not affected by forest fires or excessive harvesting of timber and other forest products, while the Meme river still contains its wide variety of water species and its gradient.

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LESSONS LEARNED[5]

GROWTH OF A GENUINE AWARENESS AND WILL, AND A CHANGE IN MINDSETS

The desire and concern of the governments of Central Africa to ensure sustainable management of their forest resources can be seen in the new forestry policies appearing in the subregion. Forest management has its place in a coordinated national framework, and the choice of a forest policy is a precondition for the activities of those managing forests. The State monopoly on forest management in the past did not, however, guarantee the conservation and sustainable use of forest resources. These new policies are thus revolutionizing forest management by offering new and alternative methods – collective assumption of responsibility, decentralization, etc. – with the emergence of such spheres of application as community forests, management for timber production with the participation of local population, and the creation of community reserves.

With the change in management strategies and these political reforms, new stakeholders have emerged – small farmers, local communities, NGOs, the private sector, government technical services, etc. Moreover, the new management methods are bringing with them a kind of "transformation" of forestry staff and the transfer of organizations responsibilities from State structures to private structures (NGOs, concession-holders, etc.). Communities are now aware of the very real opportunities offered by forest management, inasmuch as they envisage an indigenous system of wealth generation by using the natural resources of their forests to meet the practical needs and strategic interests of their communities. The revolution brought about by placing a forest under sustainable management is also seen within logging companies in the form of new know-how, new working methods, new relationships within the company and with outside partners, etc. Further, logging companies themselves are now seeking and implementing forest management on their concessions.

PROGRESS TOWARDS PARTICIPATORY FOREST MANAGEMENT AND THE ESTABLISHMENT AND MAINTENANCE OF SOLID PARTNERSHIPS

The appearance and involvement of new actors not only provides major support to the forestry sector, but also allows the formation of new partnerships among the actors. The second lesson is thus to be sought in the remarkable growth of dialogue among the partners in sustainable management in Central Africa in recent years. NGOs, people's representatives, government officers, logging companies and researchers are meeting one another, exchanging ideas and moving forward together in the common interest. Forests are the focus of a variety of major interests, and sustainable forest management must be profitable to all the stakeholders.

The establishment and maintenance of effective strategic partnerships would therefore seem to be important factors in sustainable forest management, taking into consideration both the difference in levels of interests and the convergence of the interests of all the partners, so that they are able to achieve their respective goals. Partnership implies the same level of responsibility, with:

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[5] This chapter and the conclusions are taken from an article shortly to be published on the *In Search of Excellence* initiative and its results: I. Amsallem, M. Løyche Wilkie, P. Koné & M. Ngandji, Gestion forestière en Afrique centrale: à la recherche de l'excellence. Un programme de partenariat FAO/Pays-Bas. Bois et forêts des Tropiques. CIRAD, Montpellier, France.

- identification of common goals;
- a negotiation cycle;
- the signing of a partnership agreement.

With a production forest, social relationships within the company, and more generally in the area, are important because of the involvement of workers and villagers in implementing the management plan. Within the company, the advantages lie mostly in the guarantee of a permanent supply of the resource, the planning of local sales, and exporting. Professional training and the involvement of other partners, such as NGOs and the local population, are thus important elements. In other words, it is a matter of institutionalizing an approach to natural resource management based on dialogue and communication.

The participation of some of the most vulnerable and traditionally marginalized users, such as Pygmies, should also be noted. The contribution of indigenous knowledge therefore seems to be an important element in participatory forest management. Another major lesson learned during this process is the effectiveness of strengthening the local population's skills through on-the-job training. Concrete benefits are essential in order to provide the incentives needed for wholehearted participation, and the greatest challenge facing participatory management is that of generating income and devising mechanisms for distributing such returns to the communities.

IMPROVING KNOWLEDGE OF THE RESOURCE AND TAKING INTO CONSIDERATION THE VARIOUS FUNCTIONS AND USES OF FORESTS

The other trend in current forest management practices in the subregion is that they now take account of the protective and ecological functions of forests (biodiversity conservation, reduced-impact logging) and the social and cultural functions (safeguarding the forest heritage, for example), and not just the productive function. In other words, production goals are linked to other goals such as biodiversity conservation. The challenge, therefore, is to create multidisciplinary approaches that are viable in theory and practice and take account of the various dimensions of sustainability. Biodiversity is thus sometimes included in multiresource management inventories – although norms for such inventories still need to be developed and tested. Wildlife management activities are sometimes incorporated into forest concessions. Also noted is the spread of reduced-impact logging techniques, such as those described in Cameroon's "Norms for forest intervention", linking conservation and production. The social and cultural dimensions can also be addressed through the use of participatory methods. In a multiple-use, multipurpose forest, the success of management therefore depends on constant communication and collaboration among the various parties involved. It is also important to reconcile customary law and modern law and establish a consultation and discussion forum.

Production is becoming diversified and may include NWFPs, ecotourism, etc. These products are sometimes taken into account even in preparatory studies for management plans (observations on NWFPs during management inventories, and socio-economic surveys). There are also agroforestry systems on farmland that include multiple-use trees and which are still one of the main sources of income for the people, even if they have not yet received the same attention as community forestry.

Current examples of forest management also show the considerable progress achieved in the knowledge of ecosystems and forest resources. Management is now based on detailed knowledge of the initial status of the forest, its various resources and its social context. The forest management inventory is thus the key element in long-term planning of activities in a forest and represents the prime opportunity to gather the maximum amount of information on the area to be managed. However, a dynamic, all-encompassing view of natural resources and the ecosystem is still needed. Experimental procedures have been implemented in an effort to address some of these issues, and collaboration with research institutes is vital in this task.

PROGRESS TOWARDS AN INTEGRATED APPROACH AND A LONG-TERM VIEW

In this emerging model of decentralized, negotiated forest management, in which responsibility is transferred to the local stakeholders, the various dimensions of sustainability are taken into account with varying degrees of success. Apart from its long-term or time-linked dimension, the economic, technical, sociocultural and ecological dimensions of sustainability are being addressed, using an integrated approach to the conceptualisation and implementation of forest management. The aim is thus to integrate and manage a forest area and resource sustainably over the long term, using certain production tools and in agreement with the various stakeholders. Rules of access to the resource are clarified and management procedures defined. Production and processing capacities (both industrial and small-scale) are adapted and the resource is renewed and maintained. Considerable efforts have been made to provide the technical guidelines needed for field-level adoption of sustainable management practices. Efforts are also being made to develop criteria and indicators for evaluating the sustainability of forest management. However, the process of forest certification is still not fully under way, although it is now receiving considerable attention.

The problem of the time scale used in forest management arises from the fact that trees are slow-growing perennial plants. This creates difficulties particularly in evaluating silvicultural practices in terms of their long-term effects on forest dynamics and the ecosystem in general, with a view to defining a silvicultural system that ensures conservation and sustainable forest production. The adoption of sustainable management practices is easier in a long-term management framework, with concessions, for example, so that the logging company has guaranteed access to the resource.

CHALLENGES POSED BY SUSTAINABLE FOREST MANAGEMENT IN CENTRAL AFRICA

In general terms, although the various actions and initiatives now under way are promising, they often come up against constraints of various types:

- Political constraints. The sometimes very violent civil strife and unrest experienced by some countries in the subregion lead to mass movements of people, aggravating their often already precarious situation.
- Financial constraints. Very little forest revenue is injected back into the sector. Forest management is expensive in financial, human and material terms.

National forest funds must be established or reactivated and guarantee mechanisms introduced to allow the financing of management plans. An objective and fair review of the forest taxation system should be able to offer a solution.

- Commercial constraints. Companies prefer to confine themselves to a few commercial species in order to reduce risks. The international timber market is thus a major factor – and one hard to control – in the success of management projects. Marketing is an essential aspect of forest management, as is the local processing of products, and both these elements should be taken into account. Industrialization will also increase locally added value, diversify production and reduce risks.
- Institutional and regulatory constraints. Modern law and customary law are often in conflict, and there is very little dialogue among the various sectors and among the main stakeholders. Poor capacities and institutional instability, especially with regard to the planning and monitoring of management plans, hamper sustainable forest management at the national level, as does the lack of technical skills of the human resources assigned to forest activities. Recent regulations are either convoluted or hard to implement.
- Socio-economic constraints. The basic problem is poverty, which leads directly to indiscriminate use of forest resources. Their poverty lays communities open to the systematic cut-price exploitation of all their forest resources by economic partners. One of the greatest constraints on forest management is therefore the clash of interests between those working for sustainable forest management and those seeking immediate economic gains. Insufficient attention is still paid to the social dimension in the preparation of management plans, although there has been significant progress in recent years. Moreover, donors' interventions often take no account of the regional or cross-border character of natural resources, although many communities were split by the boundaries imposed in colonial times.
- Technical constraints. The lack of knowledge on the nature of forest resources and the impossibility of reconstituting them exactly as they were are major constraints. Forest resource assessment methods must be appropriate in order to avoid expensive and poorly targeted inventories. Although harvesting and silviculture regulations do exist, they are hard to apply. A better grasp of management parameters is needed if un-sustainable harvesting is to be avoided.
- Knowledge is inadequate, scattered and poorly disseminated in many of the spheres of sustainable forest resource management. Research is still the key to understanding the ecological and sociocultural environment, improving the institutional and legislative framework, understanding production systems and developing appropriate forest management techniques. However, research cannot make an effective contribution to sustainable management unless priority research issues are clearly defined, financial, material and human means are made available, research institutes coordinate actions and results are disseminated in a language accessible to all. In addition, trainers and training institutes must design programmes to meet the changing needs of actors and stakeholders in the forest sector.

CONCLUSIONS AND OUTLOOK FOR THE FUTURE

The forest sector in Africa is in the process of radical change. The simple, rigid forest management models of the past are becoming more complex. The imposed, centralized system of yesteryear, dominated by the State and excluding the local population from decisions concerning forest management and its implementation, is giving way to a negotiated, decentralized system. Whereas interventions in the forest sector previously focused on timber production and income generation, they now encompass a whole range of products and services, providing economic opportunities for communities and individuals, and seeking to contribute to poverty reduction and biodiversity conservation. The analytical and reductionist forest management of an earlier technical approach is changing, moving towards participatory management and trying to use an integrated, multidisciplinary approach involving farmers, local communities, NGOs, private-sector operators, government technical services and political leaders. Production and management goals are being diversified over a longer term to cover the many benefits to be obtained from forests, including environmental goods and services.

The success of forest management will, however, depend on the establishment of such preconditions as poverty reduction, improvement in the well-being of the local population and involvement of the various stakeholders at the local, national, regional and international levels. Forest management requires not only financial resources, but also a political will, social investments and, most important of all, the active involvement of local stakeholders such as communities and logging companies. It also requires greater attention to sustainable financing through the creation and transparent management of funding mechanisms. Investments are also needed in order to build up human and institutional capacities and disseminate knowledge.

The definition used in Africa for managed forest areas is "the area of forest which is managed for various purposes (conservation, production, other) in accordance with a formal, nationally approved, management plan over a sufficiently long period (five years or more)".[6] In terms of this definition, it is hard to find countries in Central Africa that provide full information on forest areas covered by a forest management plan that is both formal and approved at the national level. However, each of the countries of the subregion has adopted a strategy and an action plan that take account of their specific features. As it has been seen in the examples of forest management summarized in the present document, management rules have been proposed for each type of forest, such as the obligation to make an inventory of the resource and submit a management plan prior to any commercial logging in Gabon. In the Congo and Cameroon, State-owned forests have been divided into forest management units with guidelines for the use and development of resources. Simple management plans have also been drawn up for village and community forests, etc. Considerable efforts have been devoted to providing the technical guidelines needed for field-level adoption of sustainable management practices in the subregion. Efforts are also being made to develop criteria and indicators for evaluating the sustainability of forest management. However, the process of forest certification is still not fully under way in most countries, although it is now receiving considerable attention.

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[6] FAO. 2001. *Status and trends in forest management worldwide, 1980-2000.* By Mette Løyche Wilkie. Unpublished.

Under the *In Search of Excellence* initiative for identification of some of the best managed forests in Central Africa, more than a year's hard work led to 24 nominations, although more than 250 individuals, organizations and networks had been contacted. Even so, the 14 case studies then made (a list of which is given in Annex 1) do allow us to appreciate the quality of the nominations and the selected examples. In addition to the publication of these 14 case studies, the proceedings of the workshop on sustainable management practices in the tropical forests of Central Africa, organized by FAO and its partners (Kribi, Cameroon, 10–14 September 2002) within the framework of the *In Search of Excellence* initiative, were recently published by FAO,[7] as well as a study on the present status and trends, including country status reports for the 11 countries of the subregion.[8]

The selection of forests in Central Africa managed for a wide range of purposes and in different contexts gives an idea of their experience of sustainable forest management and of practices that can be replicated elsewhere, and the whole issue of sustainable management of Central African forests in its various aspects is presented through these examples. It is important to continue to keep up the contacts established in the course of this initiative and extend them to include other partners. And it will be important in the future to follow up and support such exchanges of experience and information on the continuation or inception of specific activities either throughout a country's forests or in individual forests with a view to improving present practices, by forming new networks and collaborating with already existing networks.

The *In Search of Excellence* initiative reflects the clear will and concern of Central African governments to ensure the sustainable management of their forest resources. Although the socio-political unrest and indeed civil war that have riven the countries of the subregion have hampered the implementation of any sustainable forest management programme for some years, it is encouraging to see the present commitment in favour of the forests of the Congo basin on the part of both governments and the international community. The conjunction of the interventions now being made under the New Partnership for Africa's Development (NEPAD) Environmental Plan of Action, the COMIFAC Plan of Convergence and the Congo Basin Forest Partnership could very shortly bring about a favourable context for the development of sustainable management of the subregion's forests.

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[7] FAO. 2003. *Conservation and sustainable management of tropical moist forest ecosystems in Central Africa; Proceedings of the regional workshop on sustainable forest management practices in Central Africa, Kribi, Cameroon, 10-14 September 2002*. Isabelle Amsallem (ed.).

[8] FAO. 2002. *Status and trends in forest management in Central Africa*. By Isabelle Amsallem.

ANNEXES

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ANNEX 1: CASE STUDIES PRODUCED UNDER THE *IN SEARCH OF EXCELLENCE* INITIATIVE

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la gestion participative des plantations forestières de Magara, Burundi. By Ir. Révérien Ndikubwayo, October 2002. Forest Management Working Papers, Working Paper FM/8F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: le Parc national de la Kibira, Burundi. By Cyriaque Nzojibwami, October 2002. Forest Management Working Papers, Working Paper FM/9F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la zone de Campo-Ma'an, Cameroun. By Guillaume Akogo, October 2002. Forest Management Working Papers, Working Paper FM/10F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Case study of exemplary forest management in Central Africa: community forest management at the Kilum-Ijim mountain forest region, Cameroon. By Christian Asanga, October 2002. Forest Management Working Papers, Working Paper FM/11. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: les systèmes agroforestiers cacaoyers, Cameroun. By Denis J. Sonwa, October 2002. Forest Management Working Papers, Working Paper FM/12F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la forêt de la coopérative agroforestière de la Trinationale (CAFT), Cameroun. By André Pa'ah, October 2002. Forest Management Working Papers, Working Paper FM/13F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la forêt de Lokoundje-Nyong, Cameroun. By Germain Yene, October 2002. Forest Management Working Papers, Working Paper FM/14F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la concession forestière sous aménagement durable (CFAD), Gabon. By Nicolas Bayol, October 2002. Forest Management Working Papers, Working Paper FM/15F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Estudio de un caso de ordenamiento forestal ejemplar en Africa Central: El bosque de Caldera de Luba, Guinea Ecuatorial. By Paulino Bololo Ekobo, October 2002. Forest Management Working Papers, Working Paper FM/16S. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: le permis d'exploitation et d'aménagement n°169 de la forêt de Ngotto, République centrafricaine. By Georges N'Gasse, October 2002. Forest Management Working Papers, Working Paper FM/17F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: le Sanctuaire de gorilles de Lossi, République du Congo. By Norbert Gami, October 2002. Forest Management Working Papers, Working Paper FM/18F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la concession de Pokola-Kabo-Loundoungou, République du Congo. By Donatien N'Zala, October 2002. Forest Management Working Papers, Working Paper FM/19F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la forêt de Mogroum, Tchad. By Hamid Taga, October 2002. Forest Management Working Papers, Working Paper FM/20F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

Etude de cas d'aménagement forestier exemplaire en Afrique centrale: la forêt communautaire de Moangue le Bosquet, Cameroun. By Antoinette Pa'ah, October 2002. Forest Management Working Papers, Working Paper FM/21F. Forest Resources Development Service, Forest Resources Division. FAO, Rome (unpublished).

FAO TECHNICAL PAPERS

FAO FORESTRY PAPERS

1 Forest utilization contracts on public land, 1977 (E F S)
2 Planning forest roads and harvesting systems, 1977
3 (E F S)
3 World list of forestry schools, 1977 (E/F/S)
3 Rev.1 World list of forestry schools, 1981 (E/F/S)
3 Rev.2 World list of forestry schools, 1986 (E/F/S)
4/1 World pulp and paper demand, supply and trade 1– Vol. 1, 1977 (E F S)
4/2 World pulp and paper demand, supply and trade – Vol. 2, 1977 (E F S)
5 The marketing of tropical wood in South America, 1976 (E S)
6 National parks planning, 1976 (E F S**)
7 Forestry for local community development, 1978 (Ar E F S)
8 Establishment techniques for forest plantations, 1978 (Ar C E* F S)
9 Wood chips – production, handling, transport, 1976 (C E S)
10/1 Assessment of logging costs from forest inventories in the tropics – 1. Principles and methodology, 1978 (E F S)
10/2 Assessment of logging costs from forest inventories in the tropics – 2. Data collection and calculations, 1978 (E F S)
11 Savanna afforestation in Africa, 1977 (E F)
12 China: forestry support for agriculture, 1978 (E)
13 Forest products prices 1960-1977, 1979 (E/F/S)
14 Mountain forest roads and harvesting, 1979 (E)
14 Rev.1 Logging and transport in steep terrain, 1985 (E)
15 AGRIS forestry – world catalogue of information and documentation services, 1979 (E/F/S)
16 China: integrated wood processing industries, 1979 (E F S)
17 Economic analysis of forestry projects, 1979 (E F S)
17 Sup.1 Economic analysis of forestry projects: case studies, 1979 (E S)
17 Sup.2 Economic analysis of forestry projects: readings, 1980 (C E)
18 Forest products prices 1960-1978, 1980 (E/F/S)
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Conscious of the threats to their forest ecosystems, the countries of Central Africa are multiplying their efforts related to the sustainable management of their forests, for example by adopting new policies, revising forest laws and elaborating national forest action programmes. Initiatives in sustainable forest management include decentralization of power to the local level, participatory approaches and taking into account the multiple uses and functions of forests. To highlight the numerous efforts undertaken in forest management within the past 20 years, FAO, within the framework of the FAO/Netherlands Partnership Programme and in close collaboration with regional and international organizations, recently launched a new initiative entitled "In search of excellence" to identify and document successful examples of sustainable management. Using an open, transparent and participatory approach, 24 nominations originating from nine countries in Central Africa were obtained. This document describes these forests and contains in-depth analyses in the form of 14 case studies. The management practices identified demonstrate the evolution of the forest sector in Central Africa. Forest management models are becoming more and more complex: interventions now involve the different forest management actors, take into account the different products and services derived from the forests and aim at alleviating poverty and contributing to the conservation of biological diversity. Despite the many constraints identified, the new approaches and techniques are used for a variety of forest management objectives, at different scales and for different management structures. This compilation of information constitutes a source of inspiration for the actors in the forest sector and should lead to more widespread application of improved forest management practices which include all aspects of sustainable development.

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